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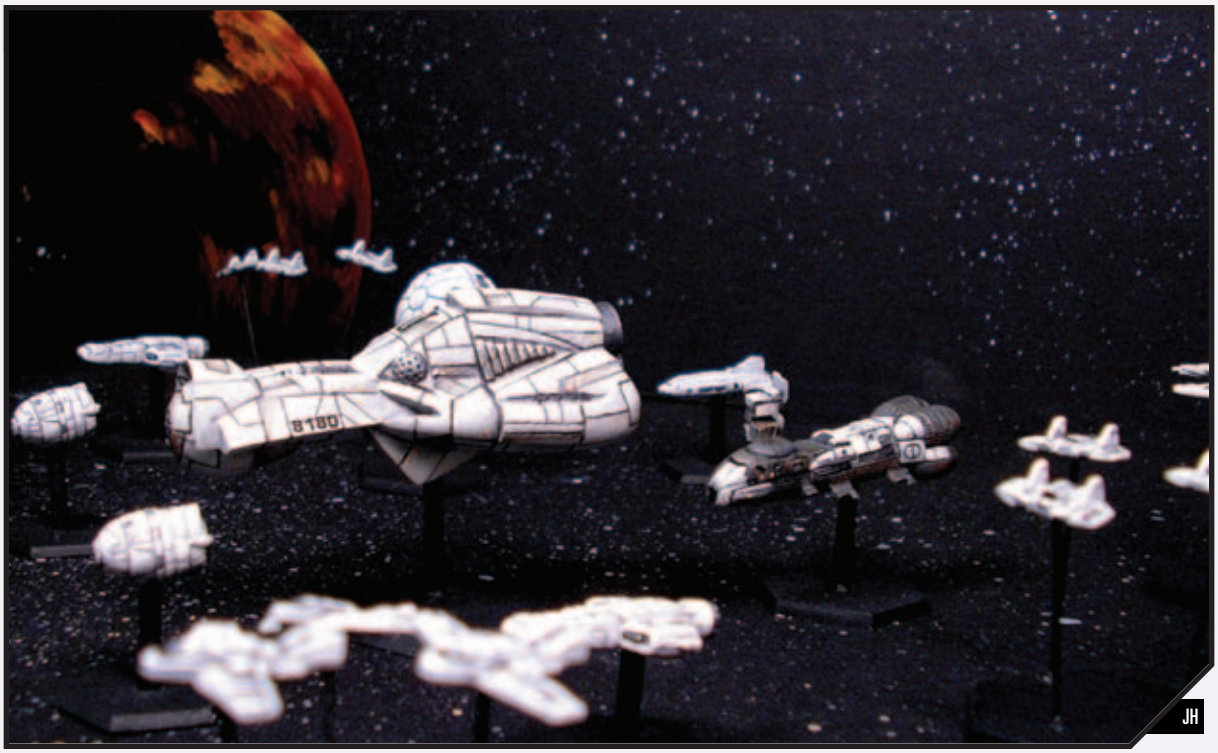
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BATTLETECH™

STRATEGIC OPERATIONS

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A Word of Blake fleet, lead by the Black Lion*-class* Rays of Enlightenment*, moves to protect one of its Hidden Worlds: the Ruins of Gabriel.*

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To the following on-line players that provided great suggestions, off of which many of the rules in this book were built: 3rdcrucislancers, abandon, adept dave Baughman, agen, aparbiter, asano, atlas3060, auren, awprime, axeman89, bean2213, bedwyr, Blackhorse 6, blacksheep, bluedragon7, bluetiger, boilerman, bored_lyron, boyscout, bryanc, bulldog79, cache, cannonshop, captainjohn, casper, chaos cat, charlie tango, chrisxa, cobrausn, coelacanth, daemion, dark jackal, dark jaguar, dark_falcon, darkstar2011, Davion, deathknight69, Deathrider6, demi-precentor worktroll, diplominator, dukeroyal, elsni, failure16, fireangel, foxes teeth, freak, gaiiten, gbscientist, general308, geoff watson, ghost0402, glitterboy2098, gojira01, gomi, goose, gracus, greywolfactual, gus, Harvey, hunterada, ice_trey, idea weenie, istal devalis, jackmc, jedibear, jeyar, jibbajabbawocky, jimdigris, jink rum, jmiles2, jungle boy, kit_desummersville, kobra, kojak, kuttsinister7, Leon_Shirow, lissette woo, lyonheart, mad malefactor, malakar, martius, mattlov, max francis vard, minchandre, mock26, mostro_joe, mystic, nan, nightlord01, nikita, oldfart3025, omaharenegade, panzerfaust150, perkinsc, peter smith, praetorian, prometheus fire, purpledragon, rage, redshirt, revanche, rexor-k, Rick Raisley, rommel_twee, shadow slayer, shadow_walker, shadow6, shatara, shijima, shockwave, sierra_gulf, skiltao, sldf_spector, snake_eyes, sudedei, sushi, talz, teamnutmeg, tel hazen, torrent, truegrit, truetanker, twycross, urgru, vandal, vega_obscura, vorpal, wantec, warchicken, wasp, weirdguy, weirdo, welshman, werewolf, whistler, wildfire, wolf lancer 4, wolfspider, wrangler, zone of alienation.

Special Thanks

To the Aerospace Cabal: Joel "Welshman" Bancroft-Connors, Jason Donahue, Térence "Weirdo/Zug" Harris, Mike Miller, Luke "Jellico" Robertson, and Christopher K. "Goose" Searls. I've tried hard to interact with the community over the years, taking their dedication and passion and using that to increase the quality of our products. The creation of the "Aerospace Cabal" and their work on *Strategic Operations* took that to a new level, as I directly tapped into players' expertise to "hopefully" fill in so many of the gaps left in aerospace rules across so many years. I believe I can finally say that this is the rules set aerospace fans have been waiting for.

Dedication

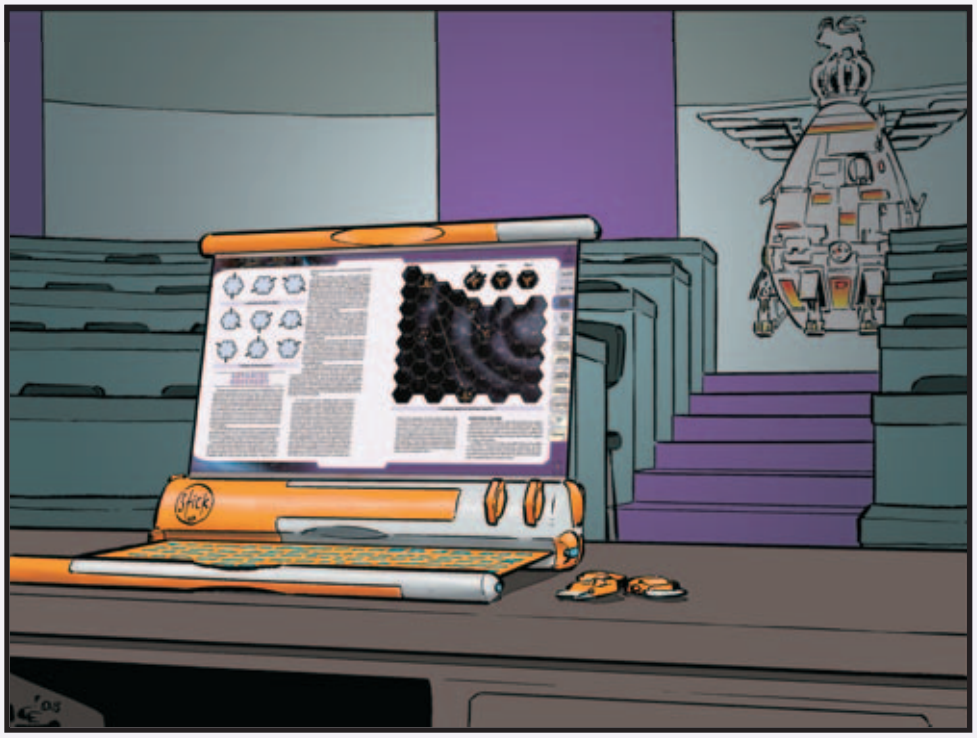
As this book is really volume two of *Tactical Operations*, I must again dedicate this book to my fantastic, all-too-forgiving wife. Again, please give Tara a giant round of thanks if you like these core rulebooks, as they wouldn't exist without her support.

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The *Total Warfare* (*TW*) and *TechManual* (*TM*) rulebooks present the core game and construction rules for *BattleTech* (*BT*), otherwise referred to as the standard rules. These two volumes encompass eight core unit types—several of which contain numerous sub-unit types—and a host of weapons and rules, as well as covering many different game situations. However, despite the breadth of play covered, many game situations still fall outside those rules, not to mention a plethora of more advanced equipment, as well as a few advanced units.

ADVANCED RULES

Beyond the standard rules, a legion of advanced rules exists, allowing players to expand their games in any direction they desire. In an effort to bring these rules to players in the most logical form possible, the advanced rules are contained in three "staging" core rulebooks, each one staging up and building off of the previous rules set. Additionally, each one focuses on a particular "in-universe time frame" that will allow players to easily grasp where a given rulebook will "plug into" their existing game play.

TACTICAL OPERATIONS

SitRep:
Forces on-world.
Conflict expected to last mere hours to achieve object.

BattleTech Tactical Operations (*TO*) is the first in the "staging" Advanced Rulebooks. Its focus is during game play, and applies directly to a game as it unfolds on a world in the *BattleTech* universe; its rules represent hours in-universe, the time frame it takes for a single, moderate-sized battle to play out on a gaming table.

Building on *Total Warfare* and *TechManual*, *Tactical Operations* conveys many advanced rules for movement and combat across various units, while expanding core rules such as those for buildings, and implementing a host of advanced terrain and weather rules. Rules for the construction and use of advanced Support Vehicles are presented, as well as advanced and prototype construction options and weapons for use by almost every unit.

STRATEGIC OPERATIONS

SitRep:
Forces in solar system.
Beginning burn to planet.
Conflict expected to last weeks to achieve object.

BattleTech Strategic Operations (*SO*) is the rulebook you hold in your hands and is the second "staging" Advanced Rulebook. It stages a player up to the next logical area of play, focusing on "in a solar system" and multi-game play; its rules represent weeks within the *BattleTech* universe, the time frame needed for several battles to conquer an entire solar system.

Strategic Operations contains advanced movement and combat operations emphasizing the importance of aerospace units, while extensive rules cover combat drops of numerous troop types into any situation. Linked scenarios and comprehensive maintenance, salvage, repair and customization rules provide an easy format for players to turn multiple games into an interconnected campaign to capture a target system, where the support crew of technicians and doctors and their skills can be just as important as any warrior. Complete game play and construction rules for advanced aerospace units are also included. Finally, a complete game system—*BattleForce*—allows players to use their existing miniatures and mapsheets to play quick, fast-paced *BattleTech* games, from small-scale skirmishes to large-scale planetary invasions.

This book contains a number of rules changes from previous editions. We feel confident that these are the most complete, clear and concise advanced rules for *BattleTech* ever presented.

These rules supersede all previously published rules, including the *BattleTech Manual*, *BattleTech Compendium*, *BattleTech Compendium: The Rules of Warfare*, *BattleTech Master Rules* (standard and revised editions), *Combat Operations, AeroTech (First, Second and revised editions)*, and *BattleForce* (First and Second editions).

To use the construction rules, designers will need paper and pencils, as well as copies of the Blank Record Sheets found at the back of this book. Due to the complexities involved with the construction of the Advanced Aerospace Units, a calculator will be handy as well.

INTERSTELLAR OPERATIONS

SitRep:
Forces marshaled.
Flotillas assigned to target solar systems.
Conflict expected to last months to achieve objects.

BattleTech Interstellar Operations (*IO*) is the third and final "staging" Advanced Rulebook. Players are staged up to the final level of play, where they can assume the roles of a House Lord or Clan Khan and dominate the galaxy; *IO* rules represent months in the *BattleTech* universe, the time frame for conquering numerous star systems.

Interstellar Operations contains complete rules for generating and running any type or size of force, as well as the *BattleTech Strategic Game: The Inner Sphere in Flames*. This comprehensive rules set governs the running of an entire faction's military as a player tries to conquer (or defend) numerous solar systems. More importantly, the Strategic Game contains rules that allow players to stage any portion of a given conflict back through the various rule sets, as they desire–from the simple, easy-to-use rules of conflict for the Strategic Game, down to *BattleForce*, or all the way back down to a standard *BattleTech* game as presented in *Total Warfare* and *Tactical Operations*. Players have complete flexibility for any type of conflict in which they wish to engage.

CHOOSE WHAT YOU LIKE

As previously noted, *Strategic Operations* encapsulates a myriad of advanced rules. In effect, all the rules and weapons/equipment in this volume are optional. This means you can use as many or as few of the rules in this book as you want. (In fact, this book contains so many new rules that we recommend you try them out a few at a time, rather than attempting to use them all at once.) Furthermore, most of the new rules and equipment here can be added individually to a standard game. You can add rules and pieces of equipment to your game one at a time—most of the rules do not rely on other rules in this book to work in existing *BattleTech* games. This allows you to tailor your *BattleTech* game to your taste by including only those rules that you find make the game more interesting or fun. Use whatever new rules and equipment you want and disregard the rest. Given the scope of the rules and the fact that they are optional, all players in a group should read through and agree to the use of any of these rules and weapons/equipment.

PLAYER ADJUDICATION

An advanced-rules book for any game is, almost by definition, more complex. In a game system with such a long and rich heritage as *BattleTech*—this rulebook alone draws from dozens of different sources across a large number of years—that complexity is even greater. Developers and writers have gone to great effort to make these rules as comprehensive as possible—not only from one section to the next in this book, but in how such advanced weapons and rules interact with the core game and construction rules as presented in *Total Warfare* and *TechManual*. However, the sheer scope of *Strategic Operations* (as with *Tactical Operation)* and the plethora of options provided means that it is not possible to cover all potential situations. Once this product reaches the players' hands, they'll envision scenarios and create situations on a game board that never crossed the minds of the developers or the legion of authors and playtesters that thoroughly worked over this product.

With that in mind, when players encounter situations not covered in the rules as they integrate the contents of *Strategic Operations* into their playing group, they are encouraged to adjudicate each situation appropriately; make up the rules that work for you. If in the process a playing group runs into an argument, feel free to let a die roll resolve any disputes so you can return to playing the game and having fun.

Finally, the forums on www.classicbattletech.com are an excellent resource. Players can tap into a strong and vibrant online community, tapping a wide selection of players for different ideas on how best to adjudicate a particular situation.

FICTION

As described in *Total Warfare* and *TechManual*, fiction plays a pivotal role in bringing the *BattleTech* universe to life. Whether "story fiction" that places readers inside the heads of the characters in that universe, or "sourcebook fiction" that places the reader in the universe as though living among those characters, both work hand-in-hand to immerse players in this vibrant milieu.

Total Warfare concentrated on story fiction, while *TechManual* concentrated on sourcebook fiction. *Strategic Operations* covers something of a middle ground, with various story and sourcebook fiction sections found throughout the book.

FICTION VS. RULES

It is important to remember that regardless of the critical role fiction plays in immersing players in the *BattleTech* universe, such fiction should never be construed as rules. As with *Total Warfare*, *TechManual* and *Tactical Operations,* to eliminate confusion about which sections are fiction and which are rules, the fiction sections have a unique look, compared to the uniform presentation of the various rules sections. All fiction sections are italicized in the table of contents.

FICTION VS. ART

Strategic Operations follows the graphic design format established by *Total Warfare*, *TechManual* and *Tactical Operations,* wedding art to the book's visual presentation in order

to enhance the players' experience. In this case, the graphic presentation represents a computer from House Marik's Lloyd Marik-Stanley Aerospace School, one of the Inner Sphere's largest and most advanced universities for the teaching of all aspects of aerospace travel, piloting and combat.

As with fiction, while art plays an important role in bringing the *BattleTech* universe to life, it should never be construed as rules.

COMPONENTS

Page 26 of *Total Warfare* (as well as p. 13 of *TM*) discusses several units that exist in the *BattleTech* universe, but fall outside the purview of the standard-rules game and construction rulebooks. Those units are discussed here.

JUMPSHIPS

JumpShips provide the only means of transportation between the far-flung star systems of the Inner Sphere, the Periphery and beyond. These vessels make interstellar leaps of 30 light-years at a time by harnessing the radiant energy of the stars with their huge solar-energy sails and Kearny-Fuchida hyperdrive technology. JumpShips are primarily used to transport DropShips between star systems.

WARSHIPS

Heavily armored, massively armed and highly mobile, the military JumpShips known as WarShips generally have the firepower to destroy even an assault DropShip with a single volley. They usually need only fear another WarShip.

As with DropShips, their myriad sizes and designs create two types of categories, both based on size, though their intended role comes into play in the second type of categorization. The first category type is simple demarcation between small and large, as explained below. The second type of classification combines size and role, though the wild variations in size and use of WarShips means that some vessels fall outside the categories shown below:

Raider: 100,000 to 150,000 tons
Corvette: 150,000 to 250,000 tons
Destroyer: 250,000 to 550,000 tons
Frigate: 500,000 to 750,000 tons
Light Cruiser: 600,000 to 725,000 tons
Cruiser: 700,000, to 800,000 tons
Heavy Cruiser: 800,000 to 1,000,000 tons
Battle Cruiser: 750,000 to 1,400,000 tons
Battleship: 1,000,000 to 2,500,000 tons
Surveillance, Transport and Carriers: No weight restrictions

Small WarShips

Small WarShips weigh less than 750,000 tons. These armed and armored JumpShips normally serve as escorts, providing protection for JumpShips and DropShip fleets. Many commanders also employ them as strategic assets, allowing them to accompany DropShips all the way to the destination planet. Upon arrival, they establish a geosynchronous orbit that allows them to react either to enemy troop movement on the ground with tactical orbital bombardments or to the threat of incoming reinforcements.

Large WarShips

Large WarShips range in weight from 750,000 to a mammoth 2,500,000 tons. Employed almost exclusively as protection for JumpShip fleets, a large WarShip rarely uses its massive destructive firepower against ground targets. Because of their sheer size and firepower, most large WarShips need only fear another large WarShip.

SPACE STATIONS

Numerous orbital facilities, colloquially known as Space Stations, serve multiple functions throughout the Inner Sphere. From factories to habitats, shipyards to system-defense stations, all of these facilities fall into one of three broad groups: low-orbit, geosynchronous or stable-point stations.



JumpShip



Small WarShip



Large WarShip



Space Station

RECORD SHEETS

Players use the following record sheets to track various types of information while playing *BattleTech*. Each type of unit (JumpShips, WarShips, and Space Stations) uses a unique record sheet. Blank Record Sheets are provided at the back of this rulebook for all unit types. How they work, and which record sheets should be used for each unit type featured in this book, are outlined below.

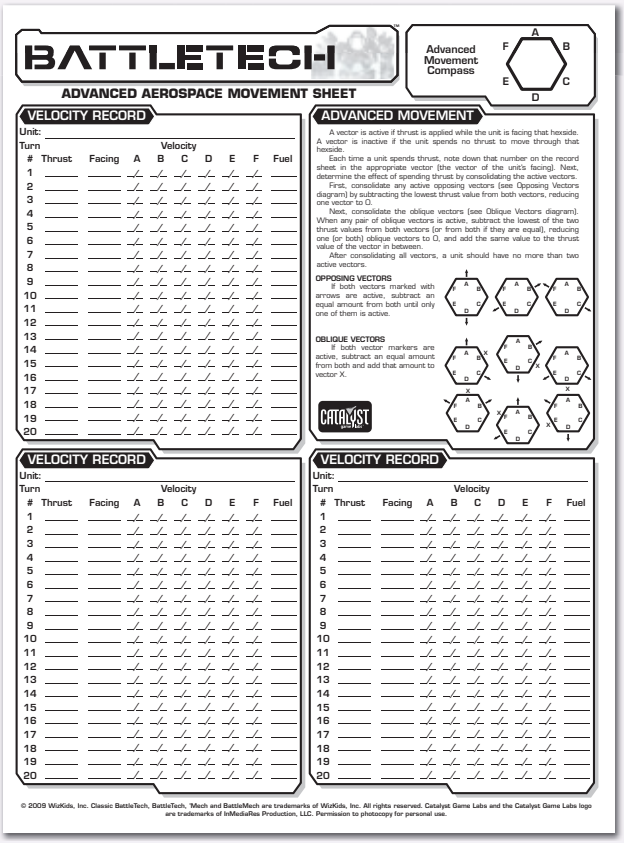
Construction

As noted in *TechManual*, at the end of the design process for any construction rules presented in this volume, each designer must translate his or her unit from its raw statistics to an appropriate record sheet in order to use it properly in a game of *BattleTech*.

AEROSPACE RECORD SHEETS

Based on unit type, the three aerospace unit record sheets have a different appearance, but use the same overall layout and core components. These record sheets are: JumpShip, WarShip, and Space Station.

Advanced Aerospace Movement Sheet: The Advanced Aerospace Movement Sheet is not a specific unit record sheet, but instead can be used in conjunction with any other aerospace record sheet either from this rulebook or *TechManual*, allowing players to easily track advanced vector movement rules (see *Advanced Movement*, p. 64).



BATTLETECH

Advanced Movement Compass

ADVANCED AEROSPACE MOVEMENT SHEET

VELOCITY RECORD

Unit:

Turn #	Thrust	Facing	Velocity A	B	C	D	E	F	Fuel
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
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16									
17									
18									
19									
20									

ADVANCED MOVEMENT

A vector is active if thrust is applied while the unit is facing that hexside. A vector is inactive if the unit spends no thrust to move through that hexside.

Each time a unit spends thrust, note down that number on the record sheet in the appropriate vector (the vector of the unit's facing). Next, determine the effect of spending thrust by consolidating the active vectors.

First, consolidate any active opposing vectors (see Opposing Vectors diagram) by subtracting the lowest thrust value from both vectors, reducing one vector to 0.

Next, consolidate the oblique vectors (see Oblique Vectors diagram). When any pair of oblique vectors is active, subtract the lowest of the two thrust values from both vectors (or from both if they are equal), reducing one (or both) oblique vectors to 0, and add the same value to the thrust value of the vector in between.

After consolidating all vectors, a unit should have no more than two active vectors.

OPPOSING VECTORS

If both vectors marked with arrows are active, subtract an equal amount from both until only one of them is active.

OBLIQUE VECTORS

If both vector markers are active, subtract an equal amount from both and add that amount to vector X.

CATALYST game labs

VELOCITY RECORD

Unit:

Turn #	Thrust	Facing	Velocity A	B	C	D	E	F	Fuel
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
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16									
17									
18									
19									
20									

VELOCITY RECORD

Unit:

Turn #	Thrust	Facing	Velocity A	B	C	D	E	F	Fuel
1									
2									
3									
4									
5									
6									
7									
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Clan Ghost Bear and Clan Nova Cat engage in a fierce naval battle in the Alshain system.

Fighter Squadron Record Sheet: The Fighter Squadron Record Sheet doesn't represent a new unit type so much as a new unit formation and a way to track those details. However, most of the information on that sheet follows the same data blocks as outlined below (for more information, see *Fighter Squadrons*, p. 27).

Unit Data

The Unit Data block for aerospace units varies by name with the unit type (JumpShip Data for JumpShips, WarShip Data for WarShips and so forth). Located in the upper left corner, this section of the record sheet lists the unit's most important statistics, including its model (Type), weight (Tonnage), Thrust Points (Safe, Max or Station Keeping), Weapons Inventory, Cost and Battle Value. JumpShips, WarShips and Space Stations, which can possess fighter and other unit bays, may note their complement of such units, followed by the number of functioning doors on the vessel capable of releasing these units during game play.

In the Weapons Inventory, weapons of identical types and location may be combined on a single line to conserve space. Unlike 'Mechs and vehicles, however, multiple weapons in the same firing arc (or the same bay, for DropShips) must note their total combined heat and Damage Values at each range bracket, as these units generally fire their weapons by arc or bay. Unlike other units, aerospace units do not list weapon ranges in hexes, but rather list the damage their weapons can deliver at each range bracket (with a value of 0 or a dash for any bracket beyond the weapon's range). Ammunition is noted on a separate line; designers can track such munitions there or in the Notes block.

Aerospace units that have access to capital missile weapons should list damage in standard- and capital-scale. To translate standard-scale damage into capital-scale damage, divide the Damage Value for the weapon in standard scale by 10 and round normally. When listing Damage Values, the appropriate format is to list the capital value first, followed by the standard damage in parentheses.

Pilot/Crew Data

This block lists the name, skills and condition of the unit's pilot or crew.

Critical Damage

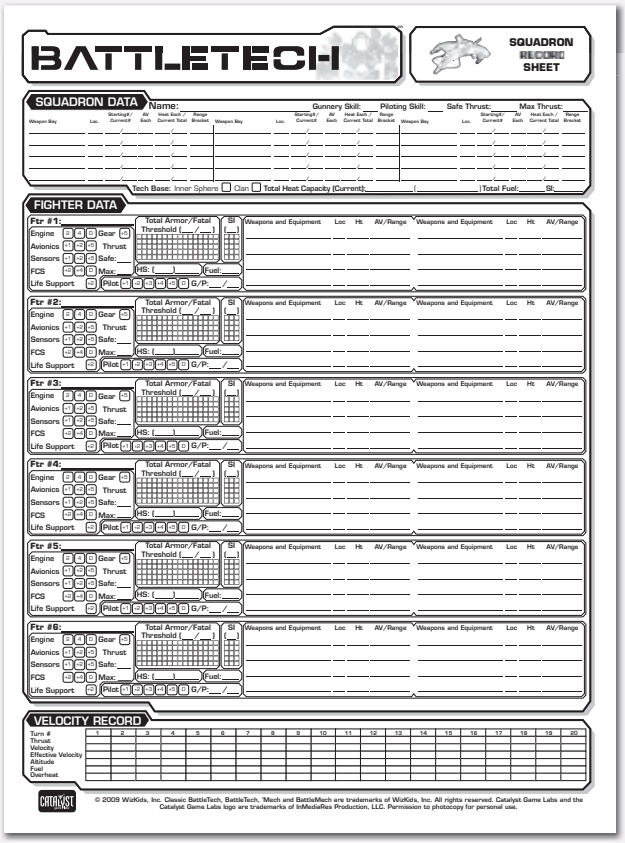
All aerospace units include a block for tracking possible effects of critical damage. The equivalent of a Critical Hits Table, this section is pre-generated, and varies only slightly by unit type.

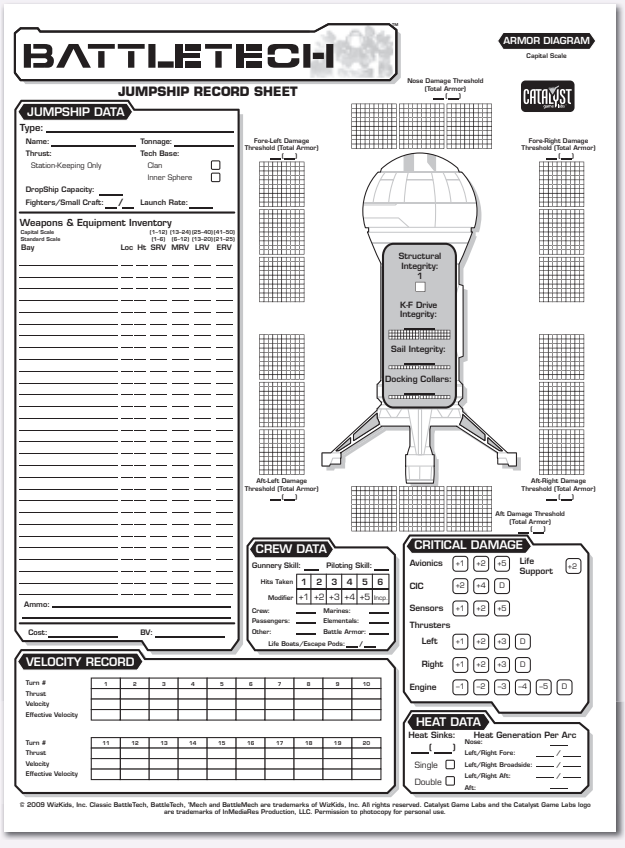
Armor Diagram

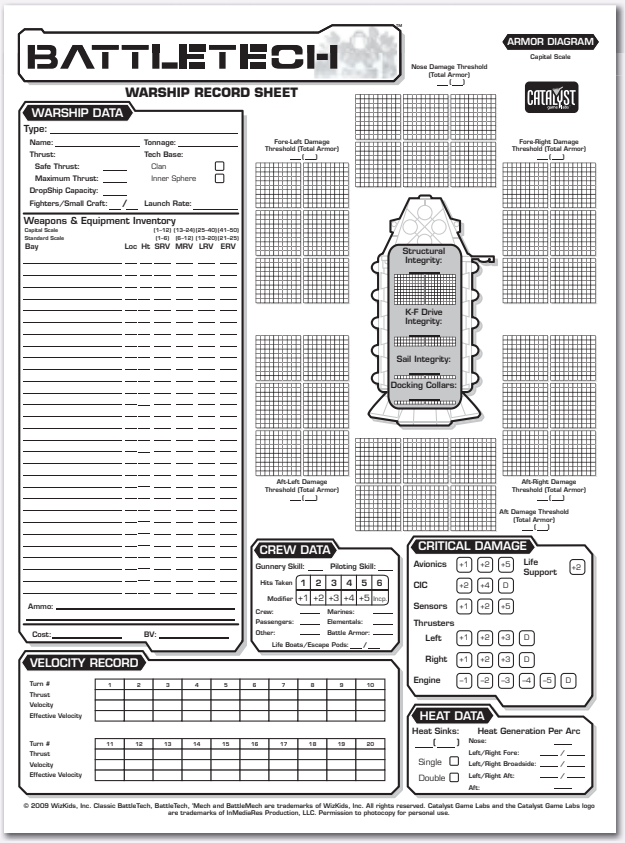
The Armor Diagram for aerospace units fills most of the right-hand side of the unit's record sheet. It outlines each of the main body locations found on the unit, and surrounds a single area shaded in gray that represents the unit's structural integrity.

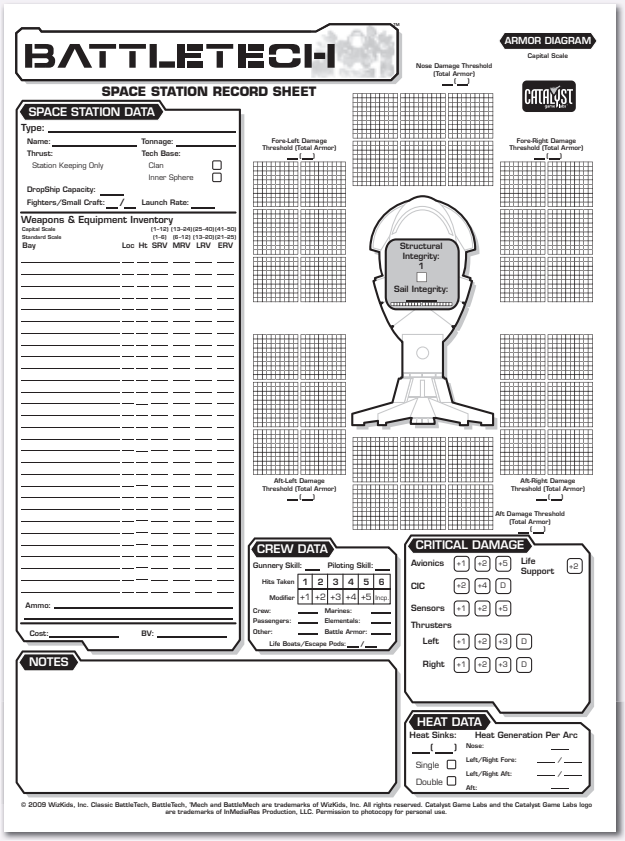
When finalizing the design of an aerospace unit, the designer must black out all excess armor and structural integrity circles/squares by location.

Capital-Scale Armor: JumpShips, WarShips and Space Stations track armor using capital scale (10 x standard-scale). To help differentiate capital-scale from standard-scale armor tracking on other aerospace units, these record sheets use squares for each armor point in place of circles.









Heat Scale

JumpShips, WarShips, and Space Stations, which operate on a zero-net-heat principle, do not use a Heat Scale, nor do they track the number of sinks on the ship using circles. Instead, these units list the number of heat sinks, checking off their type (single or double) and their heat capacity in parentheses. These units also must note the total number of heat points for each arc's worth of weapons fire. Remember that such units may not fire an arc if doing so would exceed the unit's heat sink capacity.

Velocity Record

Only found on JumpShip and WarShip record sheets, this block provides space to record the unit's current velocity during game play.

ADDITIONAL RECORD SHEETS AND TEMPLATES

The following additional record sheets are also found at the end of this rulebook, but are described elsewhere in this volume.

Radar Map

This template is used in conjunction with the Abstract Aerospace System (see p. 18).

High Speed Closing Engagements Sheet

This record sheet is used in conjunction with the High Speed Closing Engagements rules (see p. 74).

BattleForce Record Sheets

The various BattleForce Record Sheets are for use with either the *BattleForce: Standard Rules* or *BattleForce: Advanced Rules* rules set; the specifics of those record sheets are discussed in those sections (see, pp. 212 and 260, respectively).

Miniatures Rules Templates

These templates are for use with the table-top miniatures conversion rules (see *Miniatures Rules*, p. 386).

Unit Maintenance Worksheet

This worksheet is for use with the Maintenance, Repair, Salvage and Customization rules (see p. 166).

THE NAVAL FACTOR

Often overlooked today, despite their rising prominence in the strategic sense, are the aerospace and space-naval forces of the Inner Sphere. Since the debut of the airplane in the twentieth century, air power—and, eventually, space power—have become an intrinsic and vital part of any military command. The rise of the BattleMech, that wondrous engine of warfare, may have managed to capture humankind's imagination with its power and anthropomorphic design, but even in the glory days of the first Star League, no war could be won without the power of aerospace fighters, DropShips, JumpShips and WarShips.

At the height of the original Star League, national aerospace forces operated on the scale of armies, assigned not only as DropShip escorts and air-to-ground support for 'Mech forces, but also as the first line of defense for the mighty WarShips. WarShips themselves were common, with each member state claiming hundreds of these massive dreadnaughts that acted as combat vessels and a key element in strategic supply chains.

The fall of the Star League, Kerensky's Exodus, and the immediate aftermath saw the rapid decline and eventual extinction of the WarShip in the Inner Sphere. BattleMech forces took center stage once more, while DropShips and fighters found themselves stretched ever thinner to cover the duties of transport, logistics, escort and close-air support. Only the recovery of technologies in the last forty years—and the imperative for new ships presented by the returning Clans' fleets—made the birth of new WarShips possible.

Yet even now—more than twenty years later—the Inner Sphere's fleets and aerospace arms remain anemic, endangered. Prior to the Jihad, official numbers counted only ComStar and the Free Worlds League among the Inner Sphere realms who could boast a true "fleet" of operational WarShips, while the other Great Houses and the Word of Blake each possessed a few task forces at best. The FedCom Civil War and the Jihad have put these great ships to the test, while driving home the value of the aerospace fighter in an age where even a single pilot can deliver a tactical weapon capable of instantly devastating a BattleMech force.

Ironically enough, while the last few years have seen a peak in naval and aerospace fighting unparalleled in recent history, there are signs that the end of the WarShip age may again be upon us. As if in response to their return and their implied dominance of the space lanes, shipyards across the Inner Sphere have once more become the focus of military assaults, while nuclear attacks and massed fighter strikes are gradually whittling away at the ships themselves. The new "Pocket WarShips"—DropShips designed to carry capital and sub-capital weapons—have become the latest bane of modern WarShips.

What eventual form and place aerospace warfare may take in the future remains in flux, but one thing remains certain: Only a fool can overlook the potential of naval power.

—Logan DeMarco,
INN Military Industrial Analyst, Arc-Royal,
21 November 3075

CLAN WOLF

HEAVY AEROSPACE INDUSTRY (3067)	Unknown		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	None		
MAJOR NAVAL ACADEMIES	Clan Sibko System		
ACTIVE WARSHIPS (3067)	13	FIRST AEROSPACE FIGHTER	Avar (2878)
		FIRST WARSHIP	Molniya (2951)

CLAN

HOUSE STEINER (LYRAN ALLIANCE)

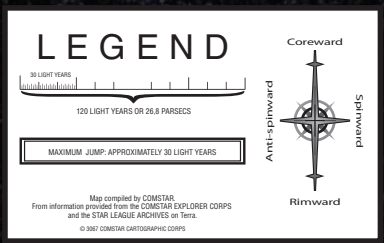
HEAVY AEROSPACE INDUSTRY (3067)	Bowie Industries, Ioto Galactic Enterprises, N&D Shipyards		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	Anti-Ship Electronic Warfare Missiles (3067*)		
MAJOR NAVAL ACADEMIES	Alarion Naval Academy		
ACTIVE WARSHIPS (3067)	4	FIRST AEROSPACE FIGHTER	Hurricane (2360)
		FIRST WARSHIP	Commonwealth (2375)

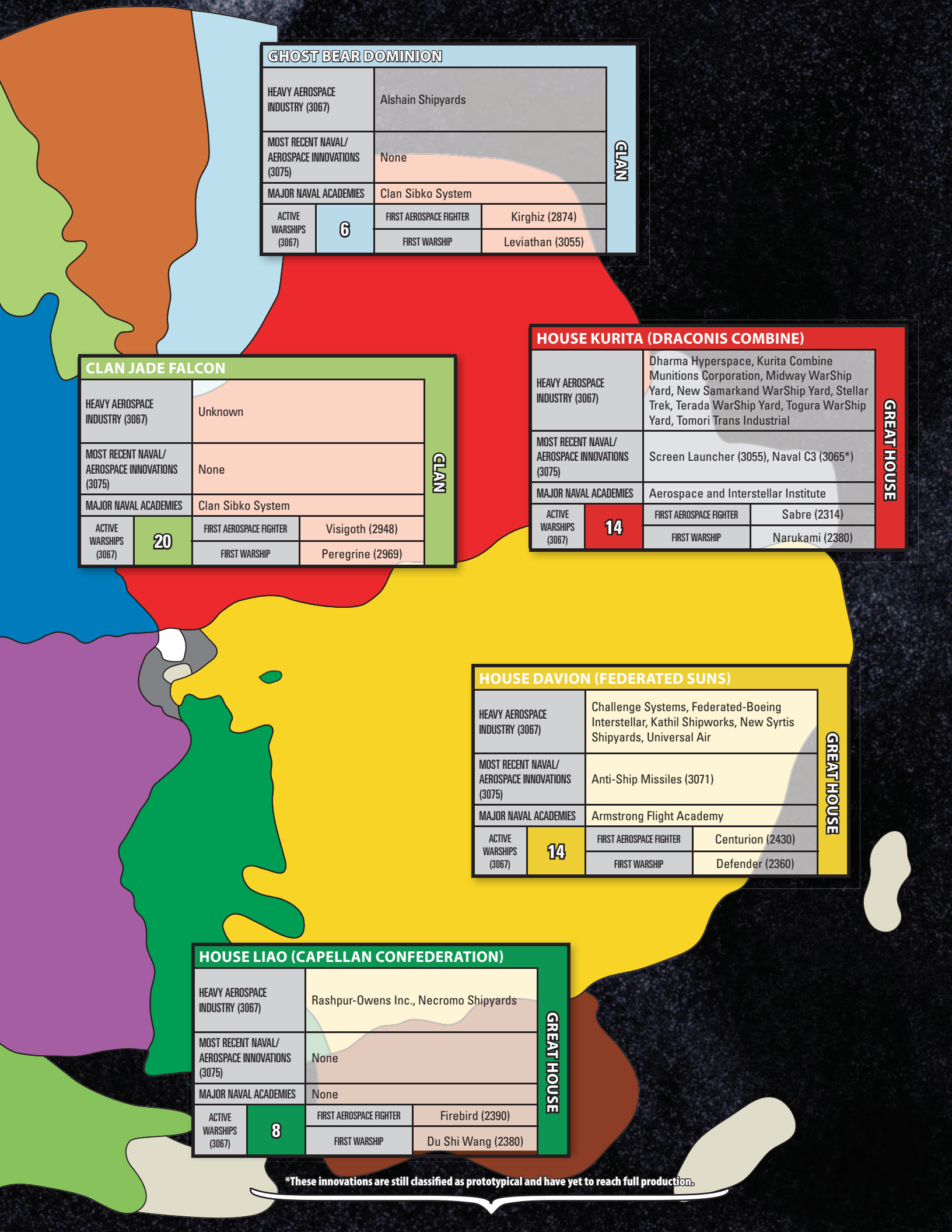
GREAT HOUSE

HOUSE MARIK (FREE WORLDS LEAGUE)

HEAVY AEROSPACE INDUSTRY (3067)	Imstar AeroSpace, Illium Naval Engineering, SelaSys Incorporated, Technicron Engineering		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	Light Air-to-Air Missiles (3072)		
MAJOR NAVAL ACADEMIES	Lloyd Marik-Stanley Aerospace School		
ACTIVE WARSHIPS (3067)	38	FIRST AEROSPACE FIGHTER	Eagle (2324)
		FIRST WARSHIP	League (2368)

GREAT HOUSE




GHOST BEAR DOMINION
HEAVY AEROSPACE INDUSTRY (3067)
Alshain Shipyards
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)
None
MAJOR NAVAL ACADEMIES
Clan Sibko System
ACTIVE WARSHIPS (3067)
6
FIRST AEROSPACE FIGHTER
Kirghiz (2874)
FIRST WARSHIP
Leviathan (3055)
CLAN
CLAN JADE FALCON
HEAVY AEROSPACE INDUSTRY (3067)
Unknown
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)
None
MAJOR NAVAL ACADEMIES
Clan Sibko System
ACTIVE WARSHIPS (3067)
20
FIRST AEROSPACE FIGHTER
Visigoth (2948)
FIRST WARSHIP
Peregrine (2969)
CLAN
HOUSE KURITA (DRACONIS COMBINE)
HEAVY AEROSPACE INDUSTRY (3067)
Dharma Hyperspace, Kurita Combine Munitions Corporation, Midway WarShip Yard, New Samarkand WarShip Yard, Stellar Trek, Terada WarShip Yard, Togura WarShip Yard, Tomori Trans Industrial
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)
Screen Launcher (3055), Naval C3 (3065*)
MAJOR NAVAL ACADEMIES
Aerospace and Interstellar Institute
ACTIVE WARSHIPS (3067)
14
FIRST AEROSPACE FIGHTER
Sabre (2314)
FIRST WARSHIP
Narukami (2380)
GREAT HOUSE
HOUSE DAVION (FEDERATED SUNS)
HEAVY AEROSPACE INDUSTRY (3067)
Challenge Systems, Federated-Boeing Interstellar, Kathil Shipworks, New Syrtis Shipyards, Universal Air
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)
Anti-Ship Missiles (3071)
MAJOR NAVAL ACADEMIES
Armstrong Flight Academy
ACTIVE WARSHIPS (3067)
14
FIRST AEROSPACE FIGHTER
Centurion (2430)
FIRST WARSHIP
Defender (2360)
GREAT HOUSE
HOUSE LIAO (CAPELLAN CONFEDERATION)
HEAVY AEROSPACE INDUSTRY (3067)
Rashpur-Owens Inc., Necromo Shipyards
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)
None
MAJOR NAVAL ACADEMIES
None
ACTIVE WARSHIPS (3067)
8
FIRST AEROSPACE FIGHTER
Firebird (2390)
FIRST WARSHIP
Du Shi Wang (2380)
GREAT HOUSE
*These innovations are still classified as prototypical and have yet to reach full production.

CLAN DIAMOND SHARK

HEAVY AEROSPACE INDUSTRY (3067)	Unknown		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	None		
MAJOR NAVAL ACADEMIES	Clan Sibko System		
ACTIVE WARSHIPS (3067)	18	FIRST AEROSPACE FIGHTER	Ogotai (2874)
		FIRST WARSHIP	Carrack (2950)

CLAN

CLAN WOLF (IN-EXILE)

HEAVY AEROSPACE INDUSTRY (3067)	None		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	Air-to-Air Arrow Missiles (3072)		
MAJOR NAVAL ACADEMIES	Clan Sibko System		
ACTIVE WARSHIPS (3067)	8	FIRST AEROSPACE FIGHTER	None
		FIRST WARSHIP	None

CLAN

CLAN NOVA CAT

HEAVY AEROSPACE INDUSTRY (3067)	None		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	None		
MAJOR NAVAL ACADEMIES	Clan Sibko System		
ACTIVE WARSHIPS (3067)	19	FIRST AEROSPACE FIGHTER	Qasar (2905)
		FIRST WARSHIP	Carrack (2950)

CLAN

COMSTAR

HEAVY AEROSPACE INDUSTRY (3067)	None		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	Tele-Operated Capital Missiles (3056)		
MAJOR NAVAL ACADEMIES	Focht War College		
ACTIVE WARSHIPS (3067)	34	FIRST AEROSPACE FIGHTER	Zero (2791)
		FIRST WARSHIP	Faslane (2882)

MINOR POWER

MARIAN HEGEMONY

HEAVY AEROSPACE INDUSTRY (3067)	None		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	Rocket Launcher Hardpoint (3064)		
MAJOR NAVAL ACADEMIES	Alphard Air Academy		
ACTIVE WARSHIPS (3067)	0	FIRST AEROSPACE FIGHTER	None
		FIRST WARSHIP	None

PERIPHERY STATE

MAGISTRACY OF CANOPUS

HEAVY AEROSPACE INDUSTRY (3067)	None		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	None		
MAJOR NAVAL ACADEMIES	None		
ACTIVE WARSHIPS (3067)	0	FIRST AEROSPACE FIGHTER	Eagle (2564)
		FIRST WARSHIP	Athena (2569)

PERIPHERY STATE

LEGEND

30 LIGHT YEARS

120 LIGHT YEARS OR 26,8 PARSECS

MAXIMUM JUMP: APPROXIMATELY 30 LIGHT YEARS

Coreward

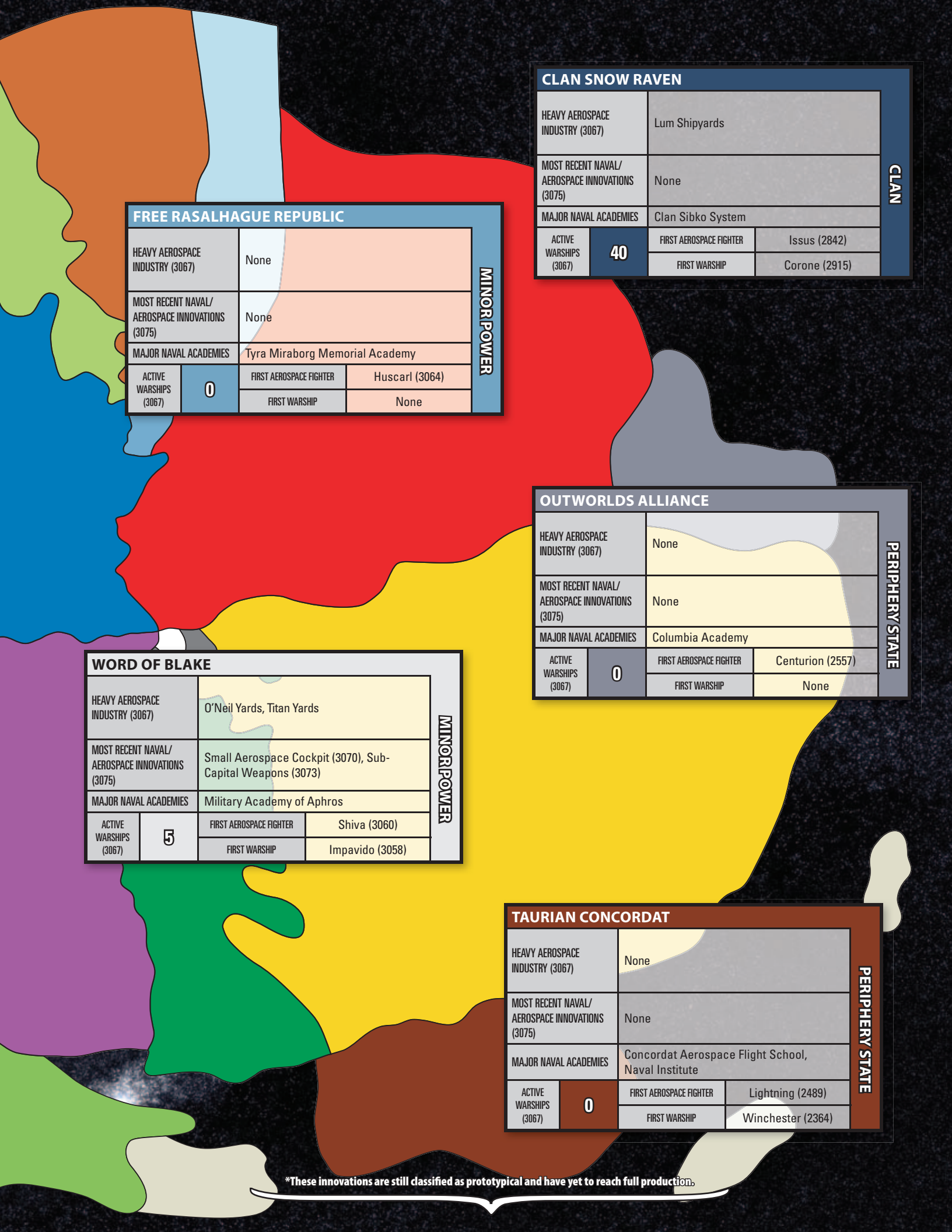
Anti-spinward

Spinward

Rimward

Map compiled by COMSTAR.
From information provided from the COMSTAR EXPLORER CORPS and the STAR LEAGUE ARCHIVES on Terra.

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CLAN SNOW RAVEN

CLAN

HEAVY AEROSPACE INDUSTRY (3067)	Lum Shipyards		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	None		
MAJOR NAVAL ACADEMIES	Clan Sibko System		
ACTIVE WARSHIPS (3067)	40	FIRST AEROSPACE FIGHTER	Issus (2842)
		FIRST WARSHIP	Corone (2915)

FREE RASALHAGUE REPUBLIC

MINOR POWER

HEAVY AEROSPACE INDUSTRY (3067)	None		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	None		
MAJOR NAVAL ACADEMIES	Tyra Miraborg Memorial Academy		
ACTIVE WARSHIPS (3067)	0	FIRST AEROSPACE FIGHTER	Huscarl (3064)
		FIRST WARSHIP	None

OUTWORLDS ALLIANCE

PERIPHERY STATE

HEAVY AEROSPACE INDUSTRY (3067)	None		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	None		
MAJOR NAVAL ACADEMIES	Columbia Academy		
ACTIVE WARSHIPS (3067)	0	FIRST AEROSPACE FIGHTER	Centurion (2557)
		FIRST WARSHIP	None

WORD OF BLAKE

MINOR POWER

HEAVY AEROSPACE INDUSTRY (3067)	O'Neil Yards, Titan Yards		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	Small Aerospace Cockpit (3070), Sub-Capital Weapons (3073)		
MAJOR NAVAL ACADEMIES	Military Academy of Aphros		
ACTIVE WARSHIPS (3067)	5	FIRST AEROSPACE FIGHTER	Shiva (3060)
		FIRST WARSHIP	Impavido (3058)

TAURIAN CONCORDAT

PERIPHERY STATE

HEAVY AEROSPACE INDUSTRY (3067)	None		
MOST RECENT NAVAL/ AEROSPACE INNOVATIONS (3075)	None		
MAJOR NAVAL ACADEMIES	Concordat Aerospace Flight School, Naval Institute		
ACTIVE WARSHIPS (3067)	0	FIRST AEROSPACE FIGHTER	Lightning (2489)
		FIRST WARSHIP	Winchester (2364)

*These innovations are still classified as prototypical and have yet to reach full production.



A pair of Outworlds Alliance Stukas *patrol over the ruins of a Periphery city scarred by battle.*

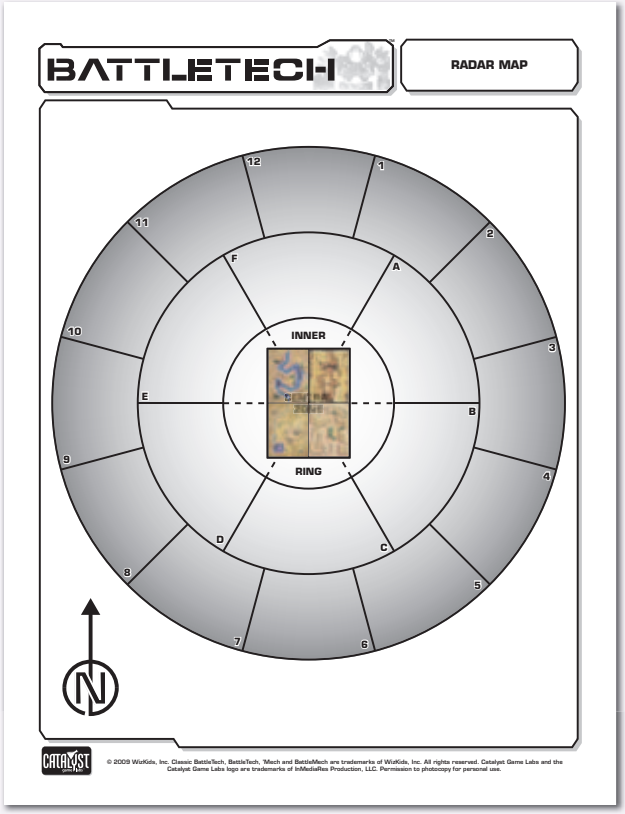
The following rules cover a wide variety of advanced options for game play.

ABSTRACT AEROSPACE SYSTEM

Aerospace support of ground troops is part of many games, though often peripheral to the ground engagement. The full-blown rules provided in *Low-Altitude Operations* (see pp. 241-249, *TW*), however, might bog down the game too much for players who prefer the action to center on the ground campaign. The following rules present a simplified version of the atmospheric mechanics for quick-and-easy use of aircraft in a ground-centered game. The Radar Map offers an abstract representation of the airspace around the battlefield for use in place of low-altitude maps.

THE RADAR MAP

The Radar Map sheet at the back of the book represents the airspace around a playing area. It is divided into a series of concentric rings, each ring representing increasing distances from the ground battle. Each ring is further divided into one or more zones to regulate movement. To use the Radar Map, first photocopy it. The radar map should be placed on the table near the ground battle playing area so that units can move easily between maps.



• RADAR MAP AND GROUND PLAYING AREA DIAGRAM •

The Central Zone corresponds to the ground playing area and represents the air directly above the battlefield, with "north" as indicated on the radar map oriented to one hexside; this should be determined and agreed upon by all players before play begins (see the Radar Map and Ground Playing Area diagram, p. 18).

The Inner Ring represents the airspace near the ground playing area but out of the immediate reach of ground units. Aerospace units in this area can quickly react to events on the ground battlefield. The Inner Ring is divided by dotted lines into six parts to help players record each unit's direction of approach to the Central Zone, though unlike the middle and outer rings it is still a single game zone.

The Middle Ring represents an intermediate distance from the ground playing area. Aerospace units in this ring are a considerable distance from the battlefield, but fast units can still react to events on the ground. This ring is divided into six zones, lettered A through F.

The Outer Ring represents the farthest distance from the ground playing area at which aerospace units are still considered to be involved in the fight. This ring is divided into twelve zones, numbered 1 to 12 and corresponding to the face of a clock.

DEPLOYING FORCES

A scenario may call for units to be deployed in specific zones. If a scenario does not specify a zone, aerospace forces should set up in the Outer Ring, directly opposite each other and on the sides that best correspond to their deployment on the ground playing area.

> *In the Radar Map diagram (see p. 20), if Player A is deploying his ground forces to enter along the "south" edge of the ground playing area, his aerospace forces would start in Zone 6. His opponent, Player B, would then deploy his ground forces to enter along the "north" edge of the ground playing area; Player B's aerospace forces would start in Zone 12. And so on.*

ABSTRACT GROUND SUPPORT

Initiative

In Abstract Ground Support rules, aerospace units (including fighter squadrons) use the standard rules for Initiative and movement order. During an Initiative Phase, aerospace units are simply part of a player's force and so the controlling player may decide when and how to move each aerospace unit, alongside his ground units.

Movement

Each region on the Radar Map represents a large, abstract area. This allows units on the Radar Map to move between regions according to their Safe Thrust values (rather than standard movement rules). Units with a current Safe Thrust of less than 10 may move one zone per turn. Units with a current Safe Thrust of 10 or higher can move two zones per turn.

A unit must move at least one zone per turn and each move must be between adjacent zones (unless engaged in combat; see *Abstract Air-to-Air Combat*, p. 21). The Inner Ring is adjacent to all Middle Ring zones. An unlimited number of fighters may occupy each zone and hex facing is not tracked.

Units ending movement in the Central Zone are assumed to be making a ground attack against targets on the ground playing area.

Aerospace units leaving the ground playing area are placed in the Central Zone of the Radar Map. Units moving outward from the Outer Ring are removed from play and cannot reenter the game for the remainder of the scenario.

Attacks

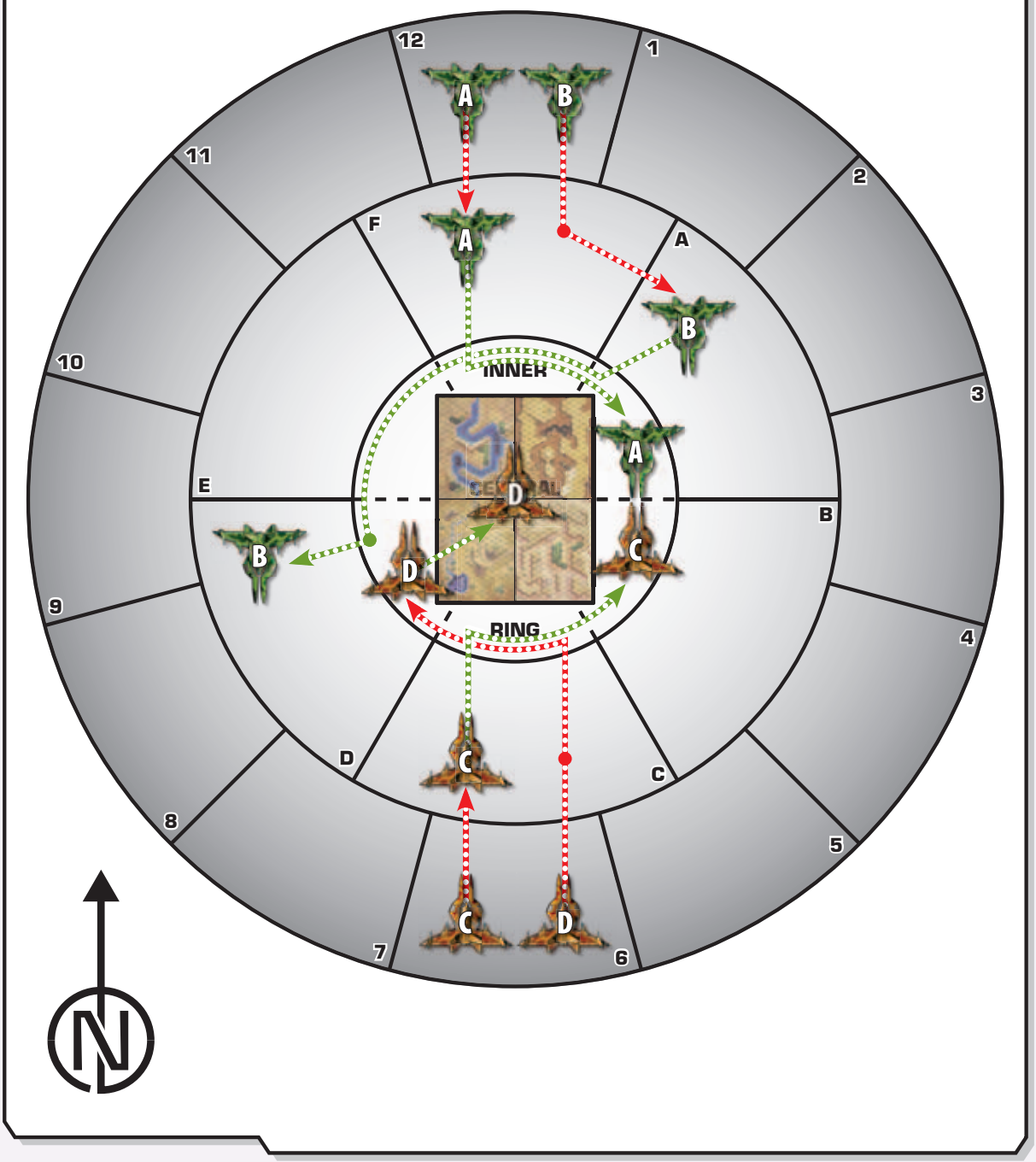
Units making ground attacks must be assigned a flight line, which is a line of hexes over the ground playing area (see *Air-to-Ground Fire*, pp. 242-247, *TW*). The first hex of this flight line must be on the playing area edge corresponding to the direction from which the unit approached the Central Zone from the Inner Ring. Aerospace units may make a single pass over the battlefield, returning to the Inner Ring of the Radar Map at the end of the Combat Phase, provided they survive any anti-aircraft fire.

Provided all players agree, at any time during the game the players also may use the *Aerospace Units on Ground Mapsheets* rules (see p. 91, *TW*) and leave the fighters on the maps.

> *On the Radar Map diagram, p. 20, two fighters join each side of a ground* BattleTech *game (a lance of 4 ground units on either side) to add an extra challenge to the scenario, though neither player wishes to use the full aerospace rules. Instead, they decide to use the Abstract Aerospace System rules and so copy the radar map and place it next to the ground playing area.*
>
> *Jim places his* Jengiz *(which has 5 Safe Thrust and so can move one zone per turn) and his* Vandal *(which has 14 Safe Thrust and so can move two zones per turn) in Zone 12; this corresponds to his home edge on the "north" side of the playing area. Sabine places her* Eagle *(6 Safe Thrust, so it can move one zone per turn) and* Sholagar *(10 Safe Thrust, and so it can move two zones per turn) in Zone 6; this corresponds to her home edge on the "south" side of the playing area.*
>
> *In Turn 1 (represented by red arrows in the diagram), Sabine wins the Initiative. During the Movement Phase of Turn 1, Jim first moves a ground unit, after which Sabine moves a ground unit. Then Jim decides to move his* Jengiz *(marked A on the diagram) from Zone 12 into the adjacent Zone F. Sabine then chooses to move a ground unit again. Jim then moves his* Vandal *(marked B on the diagram) into first Zone F and then the adjacent Zone A. Sabine then chooses to move her* Eagle *(marked C on the diagram) from Zone 6 into Zone C, after which Jim moves another ground unit. Sabine moves a ground unit, after which Jim moves a ground unit. Sabine follows that with her final ground unit, after which Jim moves his final unit. Finally, having won the Initiative, Sabine moves the final unit in the Movement Phase, her* Sholagar *(marked D on the diagram), into Zone C and then the Inner Ring.*
>
> *In Turn 2 (represented by green arrows in the diagram), Sabine wins the Initiative once more. During the Movement Phase, Jim once again moves a ground unit, after which Sabine moves a ground unit. Jim moves another ground unit, hoping Sabine will move a fighter, but she opts to again move a ground unit. Jim finally decides to move the* Jengiz *into the Inner Ring, after which Sabine moves her* Eagle *into*

BATTLETECH™

RADAR MAP



the Inner Ring as well, knowing she'll have a chance to get into a dogfight with the Jengiz *(see Abstract Air-To-Air Combat, below). Jim then moves another ground unit, and Sabine moves a ground unit as well. Jim then moves the* Vandal *first into the Inner Ring and then into Zone D, after which Sabine moves another ground unit. Jim moves his final ground unit, leaving Sabine to move her* Sholagar *into the Central Zone and commence a ground attack, which they'll play out using the standard Air-To-Ground Attacks rules (see pp. 242-249, TW).*

ABSTRACT AIR-TO-AIR COMBAT

Two aerospace units ending a turn in the same region on the Radar Map may engage in combat if one or both choose. Both pilots make a Control Roll. Add half of a unit's current Safe Thrust (round down) to the dice roll result for a successful Control Roll; add a quarter of a unit's current Safe thrust (round down) to the dice roll result for a failed Control Roll.

The player with the higher modified die roll result determines the range of the combat (if neither succeeds at their Control Rolls, the combat takes place at long range). If the modified die roll results of the fighters are the same, the fighter with the highest unmodified MoS decides the range. If the modified die roll results are the same and both unmodified MoS are the same, the combat takes place at medium range.

If both players or neither made a successful Control Roll, each unit may use wing- and nose-mounted weapons, with hits on their opponent rolled on the Nose column of the Aerospace Hit Location Table (see p. 237, *TW*).

If one pilot succeeds and the other fails, the winner is tailing the other unit—the winner's unit has managed to maneuver into the enemy unit's rear arc. The tailing unit may use wing- and nose-mounted weapons, with hits on the opponent rolled on the Aft column of the Aerospace Hit Location Table (see p. 237, *TW*). The tailed unit is restricted to firing aft weapons and must roll for hits on the Nose column of the Aerospace Hit Location Table (see p. 237, *TW*).

During the End Phase of a turn, the players can choose to continue or break off the engagement. If both choose to continue the battle, the units remain in the same region and begin by making Control Rolls to determine position (as described above). If both choose to end the engagement, their units are free to move according to the standard rules in the next turn. If one player chooses to continue the engagement and the other wishes to end it, both players make another Control Roll, reducing the target number by 2 for the tailing unit and increasing it by 2 for the tailed unit; as noted above, add half or quarter of the unit's current Safe Thrust to the die roll result based upon whether the Control Roll is a success or failure. The pilot with the higher modified die roll result decides if the engagement continues. In the case of a tie, the unit with the higher unmodified MoS decides if the engagement continues. If the unmodified MoS is a tie, the decision lies with the fighter that has the higher current Safe Thrust (if that too is tied, randomly determine a winner). If both sides fail, the engagement automatically breaks off.

Movement: If a dogfight continues from one turn to the next, neither fighter will move out of the zone it occupies—an exception to the rule that a fighter must move at least one zone every turn, as noted under Movement (see p. 19).

Multiple Fighter Engagements

Where an abstract aerospace engagement involves numerous fighters, players may wish to use the procedures outlined above, with the following modifications:

- Group all fighters on each side into as many squadron formations as possible (see the Recommended Fighter Squadron Formation Table, p. 28); when a player determines to move an aerospace unit, he moves an entire formation (as opposed to a single fighter, as described above). For example, Player A is fielding a Free Rasalhague Republic force consisting of 9 fighters. As that faction fields 4 fighters to a squadron, Player A would field three formations, two of 4 fighters each and one of 1 fighter.
- Fighter formations fighting each other are dogfighting, and should use the rules above.
- Make all Control Rolls using the best Piloting Skill Rating of a formation's fighters, but adding 1 point to the rating per every two fighters after the first two. For example, in a fighter squadron of 6, the commander has a Piloting Skill Rating of 3. This is raised to 5 for the four additional fighters (1 point for each pair of fighters) beyond the first two.
- All, some or none of the fighters in a formation may fire in any attack.
- Where the enemy target is a formation of two or more fighters, use the fighter squadron rules (see p. 27).
- Fighters not involved in a dogfight but in the same zone may fire into combat as if at long range. Determine the target of such attacks randomly from all the fighters involved in the dogfight (friend and foe).

In the Radar Map Diagram on page 20, Sabine and Jim's fighters are in the Inner Ring and commence a dogfight. Jim's Jengiz *has a current Safe Thrust of 5 and Piloting Skill Rating of 3, while Sabine's* Eagle *has a current Safe Thrust of 6 and a Piloting Skill Rating of 5.*

In the first turn Sabine rolls a 6, a success, and so adds 3 (half current Safe Thrust) for a total of 9, while Jim rolls an 8, again a success, and so adds 2 (half current Safe Thrust, rounded down) for a total of 10. As Jim's modified die roll result is higher he chooses the range for the combat.

Both pilots opt to continue the dogfight and remain in the Inner Ring the following turn. Jim rolls a 3 and so again adds 2 for a total of 5. Sabine, however, rolls a 4, a failure, and so only adds a quarter of her Eagle*'s Safe Thrust, for a total of 5. As both modified die roll results are the same, they compare unmodified MoS; since Jim had a MoS and Sabine a MoF, Jim automatically chooses the range of combat. Additionally, as Sabine failed the Control Roll, Jim's* Jengiz *is in a tailing position now.*

The dogfight continues into a third turn, both players determined to win. This time, however, the difficulty of Jim's Control Roll is reduced by 2 (because he was in the tailing position last round) and Sabine's is increased by 2. Jim rolls an 8, modified to 10, while Sabine rolls a 7 (just succeeding at the Control Roll), for a final result of 10. Again, the modified die roll results are equal, but Jim has an unmodified MoS of 6, while Sabine's is 0, so Jim determines range (because both fighters succeeded at their MoS, they're nose to nose once more).

DROPPING TROOPS

BattleMechs, ProtoMechs, vehicles, infantry and battle armor can exit an aerospace unit under four conditions: on the ground, in the atmosphere, in space (cocooned for an orbital insertion) for combat drops (also known as assault drops) or free-floating in space for zero-G operations.

Ground units departing a landed aerospace unit use the Dismounting rules (see p. 91, *TW*). The following rules describe the dropping of troops under the other three conditions.

ATMOSPHERIC DROPS

'Mechs, ProtoMechs, battle armor, WiGE Vehicles and vehicles with Jumping MP may make atmospheric drops. If a unit that can mount jump jets does not mount jump jets, it may either mount disposable jump jets (which automatically jettison upon touchdown; see *'Mech Jump Pack/'Mech Drop Pack*, p. 292, *TO*) or a Vehicular/Battle Armor Dropchute; the specific rules for how to use a Vehicular/Battle Armor Dropchute are found in the *Advanced Weapons and Equipment* section of *Tactical Operations* (see p. 348, *TO*). Combat and Support Vehicles can also use the dropchute to make atmospheric drops. Conventional infantry can make atmospheric drops if they have Jumping MP, are paratroopers (see p. 341, *TO*), or are Mechanized VTOL Infantry (see p. 324, TO; see VTOL Movement below)

A carrying aerospace unit can drop a number of units each turn equal to its operational door capacity (though if a door is damaged, either through a critical hit or through dropping a unit, no units can use that door for the remainder of the scenario). Doors noted as pure cargo bay doors, or fighter/Small Craft bay doors, cannot be used; the number of 'Mech/ProtoMech/vehicle bay doors a unit has will be noted in either the unit's technical readout or record sheet game statistics. A carrying aerospace unit can drop any number of infantry units.

Every time a non-infantry unit drops, roll 2D6. On a result of 2, though the unit successfully drops from the aerospace unit, the door is damaged and cannot be used for the rest of the scenario (it is considered to have been critically hit; see *Critical Hit Effects*, p. 239, *TW*).

Ground units that exit an aerospace unit on the space/atmosphere interface, atmospheric row or ground row hexes of the High-Altitude Map fall 1 hex per turn, starting during the Movement Phase (Aerospace) on the turn following the turn they exit. If there are two equal hexes to fall into, randomly determine which hex the unit enters. If players are using Low-Altitude Movement, ground units fall 3 Altitudes each turn.

Infantry: Infantry cannot exit a carrying aerospace unit in a space/atmosphere interface hex.

Initiative: Though dropping units cannot move in the standard sense, they still count for Initiative purposes at the start of the turn following their drop from the carrying aerospace unit; when a player nominates a dropping unit to move, it falls the appropriate number of hexes/altitudes as described above during the Movement Phase (Aerospace).

VTOL Movement: Any units with VTOL MP use the VTOL Infantry dismounting rules when making an atmospheric drop (see *Dismounting From Aerospace Carriers*, p. 225, *TW*). Such units cannot expend VTOL MP on the High-Altitude Map; only once such a unit has reached Altitude 10 of the Low-Altitude Map can it expend VTOL MP.

Atmospheric Pressure: Modify the fall rates for units as follows when using Low-Altitude Movement for different types of Atmospheric Planetary Conditions (see p. 54, *TO*).

- Trace: 8 altitudes per turn
- Thin: 5 altitudes per turn
- Standard: 3 altitudes per turn (as shown above)
- Heavy: 2 altitudes per turn
- Very Heavy: 1 altitude per turn

Attacks Against Dropping Units

Other units can attack a dropping ground unit; distance to the target is determined by the unit's current atmospheric row (or altitude, if using Low-Altitude Movement). All standard combat rules apply; see Vehicular DropChute/Battle Armor DropChute and Paratroops in the *Advanced Weapons and Equipment* section of *Tactical Operations* for additional combat rules (see pp. 348 and 341, respectively). Against non-infantry units, divide any inflicted damage into 5-point Damage Value groupings (if 5 or greater; if less than 5, do not group) and apply it using the standard rules, determining the location randomly. Roll 1D6. On a result of 1–2, the attack is against the front. On a 3, it is against the left side, while a 4 means the attack is against the right side. A result of 5–6 indicates the rear.

This means that the damage from a single attack, such as a large laser, may strike several different locations—an effect of the extreme situation of a combat drop.

Conventional Infantry: Because they are spread out during a dropping maneuver to avoid colliding with one another, do not double the damage against dropping conventional infantry (i.e., they are not considered "in clear terrain" while dropping).

Attacks by Dropping Units

Dropping units can make attacks against airborne aerospace units and ground targets. In the case of airborne aerospace units when using Low-Altitude Movement, treat the ground unit as though it is on a ground map with an altitude equal to its current altitude. In all instances, apply an additional +2 to-hit modifier, in addition to all other standard modifiers (including the +3 jumping modifier, which is applied to all units even if they are using a parachute). If attacking aerospace units, remember to apply the appropriate angle of attack modifiers.

Landing Roll

Once a dropping ground unit reaches the ground hex row on a High-Altitude Map (or Altitude 1 (NOE) if using Low-Altitude Movement), at the start of that turn, its controlling player should secretly nominate a hex (this can be done by writing the information on a piece of paper and turning it face down on the table) anywhere on the playing area in which the unit will land (separate hexes spread across the entire playing area can be assigned to different units, even if they dropped simultaneously from the same aerospace unit). If a unit is prohibited from entering a specific hex type, that hex cannot be chosen as the target, with one notable exception: a player can intentionally try to violate Stacking rules (see *Stacking*, p. 23).

At the end of the Movement Phase, after all non-dropping troops have moved, Landing Rolls are made for each dropping unit in order of their Initiative, revealing the nominated hexes before each roll (if both opponents have troops making Landing Rolls in the same turn, alternate turns as per standard movement).

For any unit with a Piloting/Driving Skill, make a Piloting/Driving Skill Roll, modified as normal for damage. For units without a Piloting/Driving Skill, roll 2D6 against a target number of 5, also modified as appropriate. In both instances, a successful roll result indicates the unit lands in the target hex at the end of the Movement Phase.

As stated previously, all units that land in a turn do so at the end of the Movement Phase after all other non-dropping troops have moved, in the order of their Initiative (if both sides have dropping troops landing in the same turn). If a unit fails its landing roll, completely resolve that situation before moving on to the next unit.

A dropping unit may not move or make attacks in the turn that it landed; dropping units may move and attack normally on the following turn. Attacks made against such units apply a +3 modifier for target movement.

WiGE Vehicle: Provided a WiGE Vehicle has 5 MP available, after the Landing Roll is resolved, the controlling player may announce he is spending 5 MP to keep the unit airborne, in which case it may move normally on the following turn; if the 5 MP is not spent, the unit is considered landed.

Planetary Conditions: Any planetary condition modifiers (such as weather; see the Weather portion of the Expanded Movement Costs and Planetary Conditions tables, p. 36, *TO*) that apply to Piloting Skill Rolls are applied to the Piloting Skill Roll above. If a unit cannot be displaced (for example, all the adjacent hexes are prohibited terrain), the unit is destroyed.

Minefields: If the target hex for a landing contains a minefield, treat the dropping unit as though it entered the hex along the ground; treat dropping units as jumping units when determining if a vibrabomb minefield is detonated after a landing (see *Jumping Units*, p. 209, *TO*).

Stacking: If a unit violates the Stacking rules when it lands, use the Unit Displacement rules to determine the effects (see p. 151, *TW*); randomly determine the direction to displace any units (if there are multiple units, randomly determine the displacement direction for each unit). This is not considered an accidental fall from above.

Double Blind Rules: Treat dropping units as jumping units when determining if a seismic sensor can detect them (see *Seismic Sensors*, p. 222, *TO*).

Failed Landing Damage

A unit that fails its landing roll takes damage as though it had fallen a number of levels equal to the number of points by which the roll failed (see *Falling*, p. 68, *TW*, for 'Mechs or *Unit Displacement*, p. 151, *TW*, for non-'Mech units). For example, if a 'Mech with a modified Piloting Skill target number of 6 or higher rolled a 3, the unit would suffer damage as from a fall of 3 levels. A Piloting Skill Roll for landing that fails by more than 7 means the unit is automatically destroyed.

Regardless of whether a unit violates Stacking rules for entering a hex, a failed landing roll automatically is treated as an accidental fall from above (see p. 152, *TW*).

Failed Landing Location

On a failed landing, the unit also scatters 1D6 hexes for every point by which the result falls below the Piloting Skill Roll target number. Use the Dive Bombing Scatter Diagram (see p. 245, *TW*), to determine the direction of the scatter.

If players are using multiple maps, the unit may scatter onto a different map. If the unit completely misses the playing area, it is considered destroyed for purposes of determining victory in the current scenario. This rule is only for use if the players are playing an ongoing campaign. In this instance, and if players are tracking damage and using repair rules (see p. 166), then a random map should be generated to show exactly where the unit landed (players can use the Rolling Maps rules from page 214 of *Tactical Operations*) and damage assigned.

Stacking: If a unit violates the Stacking rules when it scatters and enters a hex after a failed landing roll, use the Unit Displacement rules to determine the effects (see p. 151, *TW*); in this case, use the direction of the original target hex to determine the direction of movement for any displacement that might occur. As noted, this is automatically treated as an accidental fall from above (see p. 152, *TW*).

SPACE DROPS FOR ORBITAL INSERTION

For a space drop, ground units are encased in ceramic cocoons to protect them during re-entry (an entire Point/squad of battle armor is contained in a single cocoon, whereas 'Mechs, vehicles and ProtoMechs have individual cocoons). Conventional infantry cannot make a space drop for orbital insertion.

Ground units making space drops for orbital insertion use all the rules for Atmospheric Drops given above, with the following additions.

To be considered a space drop for orbital insertion, a ground unit must exit a carrying aerospace unit in a space hex affected by gravity (see High-Altitude Map, p. 75, *TW*). A ground unit that exits an aerospace unit on a space hex falls 1 hex per space turn, starting during the Movement Phase (Aerospace) on the turn following the turn they exit; if there are two equal hexes to fall into, randomly determine which hex the unit enters.

Attacks Against Cocoons

A cocoon is considered to have a single location and can sustain 100 standard-scale points of damage before being destroyed. If the cocoon is destroyed and excess damage remains, apply the remaining damage to the unit using the Attacks Against Dropping Units rules (see p. 22).

If the cocoon suffers damage but is not destroyed before entering a space/atmosphere interface hex (see above), modify the re-entry roll by +1 for every full 10 points of damage it sustains. If the cocoon is completely destroyed before re-entry, the enclosed units are automatically destroyed if they enter an atmosphere/interface hex. However, such units may be able to maneuver away from such a fate using zero-G operations (see *Space Drops For Ground Units in Zero-G Operations*, p. 24).

Drop Cocoon Hit Location: In all instances, a drop cocoon is considered to have a single hit location; no roll is made for a location.

Space/Atmosphere Interface

When a ground unit enters the space/atmosphere interface hex (see *Space/Atmosphere Interface*, p. 78, *TW*), the player must make a Control Roll (use a base target number of 4 for units without Piloting/Driving Skill rolls) with a +1 modifier to reflect the cocoon's limited maneuvering capability.

A failed re-entry roll does not mean the unit failed to enter

the hex, but failed to enter the hex without damaging itself. The unit does enter the hex, but the move automatically inflicts 120 points of damage to the cocoon, plus 10 points per MoF. Damage is first applied to the cocoon until it is destroyed. Then any remaining damage is applied in 5-point Damage Value groupings to a randomly determined location, using the Front column of the appropriate hit location table (provided the unit has hit locations); in the case of infantry, this damage is applied as though it were an area-effect weapon. Taking damage in this fashion applies a +1 modifier to the landing roll for each 20 points of damage taken by the unit, not the cocoon (see *Landing Roll*, p. 22).

If it survives reentry, the unit falls toward the planet's surface as described above. Beginning at Atmospheric Row 3, the controlling player can determine when to jettison the cocoon, which is done during the End Phase. If a cocoon is not jettisoned by the time the unit enters the ground hex (or Altitude 1 (NOE) if using Low-Altitude Movement), the unit is automatically destroyed.

SPACE DROPS FOR GROUND UNITS IN ZERO-G OPERATIONS

The following rules describe the movement of ground units, as well as the rules for converting those units for such movement, in zero-G operations. Rules for combat surrounding such units appear in detail in *Zero-G Ground Unit Combat* (see p. 119).

Ground units making space drops for zero-G operations use all the rules for exiting a carrying aerospace unit as given under *Atmospheric Drops*, p. 23. In addition, if a unit enters a space hex affected by gravity, whether directly from a carrying aerospace unit or due to its own movement (see High-Altitude Map, p. 75, *TW*), it must adhere to the effects of gravity as described under *Space Drops for Orbital Insertion*, above (at the end of the Movement Phase (Aerospace), all such ground units move toward the planet by 1 hex).

Prohibited Units: Four-legged 'Mechs, IndustrialMechs (unless it mounts a fuel cell, fission or fusion plant, and mounts the Environmental Sealing Chassis and Controls modification, and mounts jump jets), vehicles, four-legged battle armor and conventional infantry (except for xenoplanetary condition-trained troops; see p. 351, *TO*) cannot be space dropped for zero-G operations.

Converting Ground Units for Use in Zero-G Operations

Ground units are not designed for movement in zero-G and suffer severe limitations, and so to use ground units in this environment requires converting them to the equivalent of fighters. The Conversion of Ground Units to Fighters Table describes how this conversion occurs (rounding fractions up). Use the appropriate unit's record sheet and simply mark the appropriate changes for such conditions.

Movement Sub-Phases

Ground units in zero-G operations move before JumpShips in the sequence (see p. 62). When using Advanced Initiative (see p. 63), such ground units suffer a –6 Initiative modifier.

Unless otherwise noted, treat such units as fighters. Such units always operate as individual units and can never be combined into squadrons.

Movement

Ground units that exit a carrying aerospace unit, or voluntarily move off an aerospace unit's hull, have the same heading and velocity as the carrying unit. For example, if a 'Mech drops from a DropShip heading along Vector A at a Velocity of 10, the 'Mech also heads along Vector A at a Velocity of 10.

In place of directly exiting a carrying aerospace unit, a ground unit may choose to move onto the carrying unit's hull; randomly determine the location where the unit ends up, ignoring the aft and nose locations. Doing so does not expend thrust and so does not require a Control Roll.

Whenever a ground unit expends thrust to move in space (meaning it is not on the hull of an aerospace unit), the controlling player must make a Control Roll (Piloting Skill Roll) with a +2 modifier. Assume a target number of 6 for battle armor units with Space Operations Adaptations and 8 for those without. For conventional infantry (marine) platoons, use a target number 7. If the unit fails, it becomes an out-of-control unit (see *Out-of-Control Effects*, p. 92, *TW*).

Fuel: Every time a unit uses a Thrust Point, that unit also expends 1 point of fuel. These units are designed to operate in atmosphere, but in space they must use reserve reaction mass, which is limited, and when this "fuel" runs out, they may no longer expend thrust. Battle armor may be built with extra fuel tanks (see p. 255, *TM*). If

CONVERSION OF GROUND UNITS TO FIGHTERS TABLE

BattleMechs/ProtoMechs
Thrust Rating: Jumping MP ÷ 3 (round down)
Fuel: Jumping MP x 2
Offensive Systems: Use the weapon Damage Values as presented on pages 303-305 of *TW* and pp. 404-417 of *TO*. Note that these weapons have significantly reduced ranges in aerospace engagements (see Aerospace Weapon Range Table, p. 235, *TW*). Standard ground unit arcs apply. Melee weapons may not be used, with certain exceptions (see *Zero-G Ground Unit Combat*, p. 119).
Armor: A 'Mech's armor remains in the standard locations

Battle Armor (BA squads/Points are treated as single units.)
Thrust Rating: Jumping MP ÷ 3 (round down)
Fuel: Jumping MP x 6 + any fuel tanks
Offensive Systems: Use the weapon Damage Values as presented on pages 303-305 of *TW* and pp. 404-417 of *TO*, allocating all to a hypothetical Nose arc.
Armor: Total the Armor Points (excluding the 00 box for the soldier) for all the troopers in the battle armor formation. If a unit is not equipped with Space Operations Adaptations (see p. 269, *TM*), divide this total by 2.

Conventional Infantry (Marines)
Thrust Rating: Jump Rating ÷ 3 (round down)
Fuel: Jump Rating x 2
Offensive Systems: Per weapons load-out
Armor: Conventional infantry troops normally do not mount armor (each point of damage normally eliminates a single trooper); even when they do wear armor, it is treated differently (see *Infantry Armor*, p. 317, *TO*).

a 'Mech mounts a transport bay capable of carrying liquid (see p. 239, *TM*), the player can designated before a game that the 'Mech is carrying fuel. Each ton/critical slot of fuel provides 40 fuel points. Treat a critical hit against a transport bay slot carrying fuel as an aerospace fuel critical hit (see p. 240, *TW*), with the exception that the unit is not automatically destroyed; if the controlling player rolls 10 or more, it is treated as an ammunition explosion, with the damage equal to the amount of fuel remaining in the slot. Such transport slots can be refueled using the Fuel Consumption rules (see pp. 34-35).

Ejecting: BattleMech pilots may eject in space—the rules assume they are wearing some form of spacesuit while operating in space, as they would die immediately if not—but doing so is extremely dangerous. When ejecting in space, 'Mech pilots automatically take 1D6 points of damage in addition to any damage they may sustain as a result of a failed ejection roll (see *Ejection and Abandoning Units*, p. 196, *TO*).

Ejected 'Mech pilots may be recovered in the same manner as fighter pilots (see *Search and Rescue*, p. 45). However, they are only equipped with lightweight spacesuits that have limited oxygen supplies. This supply will last 30 space turns (30 minutes). Starting with the End Phase of the 31st space turn, the MechWarrior must make a Consciousness Roll in every space turn after ejecting or suffer an additional box of damage.

An ejected pilot still must conform to the effects of gravity if located in an affected hex (see *Space Drops for Orbital Insertion*, p. 23). If a pilot enters a space/atmosphere interface hex, he is eliminated.

A MechWarrior in a 'Mech cannot be equipped with a Personal Re-Entry Unit (see p. 26).

ProtoMechs: ProtoMech pilots may not eject.

BattleMech Full-Head Ejection System: Treat a BattleMech Full-Head Ejection System (see p. 310, *TO*) as a lifeboat (see *Large Craft*, p. 27).

Ramming: Ground units may make ramming attacks like aerospace units. All the standard rules for ramming attacks are used, with the following changes (see *Collisions and Ramming*, p. 241, *TW*).

When applying "Target is" modifiers from the Ramming Attacks Table, use the following: +5 for BattleMechs, +6 for ProtoMechs, +7 for infantry.

When applying "Attacker is" modifiers from the Ramming Attacks Table, use the following: +0 for infantry, +1 for ProtoMechs, +2 for BattleMechs.

When determining damage, use the Advanced Battle Armor Weights Table (see p. 187, *TO*) for battle armor. If the calculation for any damage is 0 or less, no damage is applied. For example, if the calculation for a battle armor unit's damage to a target it rammed is 0 or less, then no damage is assigned to the target (though depending on the target, damage would still be assigned to the infantry unit).

Conventional Infantry cannot damage a target in this type of ramming.

Landing on a Hull

The most common use of ground units in space is in boarding actions, where the main objective is to get the unit onto the hull of a target aerospace unit. Any 'Mech, battle armor, ProtoMech or infantry starting the turn in the same hex as an enemy Large Craft may attempt to land on that unit's hull. To do so, the controlling player must make a Control Roll, adding the appropriate modifiers from the Hull Landing Modifiers Table (below). If the roll is successful, the 'Mech, battle armor, ProtoMech or infantry lands on the hull. Otherwise, cross-reference the Margin of Failure with the appropriate effect on the Failed Hull Landing Table (below). The base landing damage of any failed landing is the velocity difference between the landing unit and its target (minimum of 1). In the case of a failed landing, apply damage to both units using the Ramming rules, see above.

Calculating the relative velocity of two units is a tricky process and varies between standard and advanced movement rules.

HULL LANDING MODIFIERS TABLE

Situation	Modifier
No fuel remaining	+2
Relative velocity	See *Landing on a Hull*, at left
Target is Out of Control	+3
'Mechs	
All armor on a location destroyed	+1 per location
Has Hatchet/Sword	–1
Has Claws or Talons	–1
Has Claws and Talons	–2
Battle Armor	
Space Operations Adaptations	–1
Has Claws and/or Magnets	–1
Has Heavy Battle Claw	–1
No manipulators	+1

FAILED HULL LANDING TABLE

Margin of Failure	Effect*
1	Hard landing. Unit takes 1D6 x Base Landing Damage.
2	Hard landing. Unit takes 2D6 x Base Landing Damage.
3	Collision. Unit bounces off the hull, taking 2D6 x Base Landing Damage, and fails to land.
4	Collision. Unit bounces off the hull, taking 2D6 x Base Landing Damage, and fails to land.
5	Collision. Unit bounces off the hull, taking 3D6 x Base Landing Damage, and fails to land.
6+	Unit misses target. May not make any other movement this turn.

*All damage is standard-scale. In all cases, the target takes a quarter of the damage applied to the landing unit (round down).

When using standard rules, three situations arise. The two units may have the same heading, in which case the relative velocity is the slower velocity subtracted from the higher velocity; they may have opposing headings (have approached each other nose-to-nose), in which case add the two velocities; or they may be "crossing" (the target unit flying across the path of the landing unit), in which case the relative velocity is the velocity of the landing unit plus half the velocity of the target (round up).

When using advanced movement, the relative velocity is the total difference in vectors between the two units.

A 'Mech with a Velocity of 5 attempts to board a DropShip with a Velocity of 7 (on the same heading) as they start the turn in the same hex. The 'Mech suffers a +2 modifier to its boarding attempt (reflecting the 2-point difference in the two units' velocities) and likewise has a Base Damage of 2 for any damage sustained in landing.

A battle armor unit with Space Operations Adaptations and a Claw traveling at Velocity 5 attempts to land on a WarShip, also at Velocity 5 but which is "crossing." The battle armor unit has a net difficulty modifier of +6 (–1 for the Space Operations Adaptation, –1 for the Claw, but +8 for the relative velocity). Despite this, its Base Landing Damage is 1 because both the battle armor unit and the target aerospace unit are traveling at the same velocity.

Using advanced movement rules, a 'Mech with vectors A2 and B1 attempts to land on a WarShip with vectors A1 and E2. The relative velocity of the two units is 4 (a 1-point difference in the A vector, the 1-point B vector of the 'Mech and the 2-point E vector of the WarShip).

EJECTION AND ABANDONING SHIP

A number of conditions may require a pilot or crew to abandon their units. Most units have systems to aid this: ejector seats in fighters, escape pods and lifeboats in larger units. Small Craft fall between these two systems, too small to mount escape pods and lifeboats yet rarely equipped with ejection systems, and so are forced to rely on manual means.

SAR: A Search and Rescue unit (usually a Small Craft, though any DropShip or WarShip can attempt a pickup) may attempt to rescue ejected pilots during a battle (see *Search and Rescue*, p. 45).

Initiative: Ejected pilots/lifeboats/escape pods always move last after all other aerospace units have moved, including dropping troops (see p. 22).

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Aerospace fighters are also equipped with an auto ejection mechanism, that operates identically to that of a 'Mech, and can be disabled in the same way as a 'Mech (see *Ejection and Abandoning Units*, p. 196, *TO*), except as noted below.

A pilot may escape from his fighter in the Movement Phase by activating his ejection system in lieu of any other action. The escape takes place automatically after the mechanism is triggered, but the pilot may sustain damage in the maneuver and must make a Control Roll. If the roll succeeds, the pilot avoids damage; otherwise, cross off one box of pilot damage per point of MoF, which may lead to the pilot's death if the pilot is already injured or the roll is very bad. If the pilot sustains damage, he also must make a Consciousness Roll.

Whether the pilot takes damage or not, place a marker indicating the pilot in the fighter's hex. In a space hex, this marker has the same heading and velocity as the fighter; if the pilot enters a Space/Atmosphere Interface hex, the pilot is killed, unless the pilot ejected with a Personal Re-entry Unit at right. In atmosphere, the marker has a Velocity of 0 and the pilot falls toward the ground, supported by his parachute, using the same rules as for dropping troops (see *Atmospheric Drops*, p. 22). If the pilot has no parachute, when it is time to make a landing roll, the pilot is killed.

When a pilot ejects, there's a chance that the ejection seat (which is ejected with the pilot, just as a MechWarrior's ejection seat is ejected during an auto-eject) is damaged to the point it will no longer function. How much air a pilot has is based upon whether he's got a functioning ejection seat or not. If the pilot ejects with a MoS 2 or greater, his ejection seat is intact and can be used; if the pilot ejects with a MoS of 1 or less, the ejection seat is damaged beyond repair and cannot be used.

An ejected pilot without a ejection seat will survive 480 space turns (480 minutes), minus 80 space turns for every box of damage the pilot has taken (either before or during ejection). At the end of the 480 space turns, if the pilot is still in a space hex (a vacuum environment), a box of damage is marked off during the End Phase. An additional box of damage is marked off during the End Phase of every subsequent space turn until the pilot is rescued or dies.

An ejected pilot with a ejection seat will survive 24 hours (1,140 space turns). All the other rules as noted above apply.

Attacks Against an Ejected Pilot: Pilots may also be targeted by enemy fire: a +5 to-hit modifier applies to all such attacks (in addition to all other standard modifiers). Any successful attack against the pilot kills him.

Safe Ejection: The rules above cover ejecting under emergency conditions. A pilot may choose to abandon his unit at any time, taking additional time to do so. In this instance, a player declares a safe ejection during the End Phase of any turn. The pilot then takes two complete turns to safely exit his unit with all available survival gear; the pilot is considered "ejected" during the End Phase two turns following the declaration. No roll for ejection is made.

Personal Re-Entry Unit: Derived from sport space-diving, a Personal Re-Entry Unit (PRU) is a small foamed, inflatable ablative shield that provides a semi-controlled re-entry for a single pilot. At the start of a scenario, all players must designate which aerospace units are equipped with PRUs; this usually is only for fighters and Small Craft, though at the players' discretion they can nominate any number and/or type of units, except 'Mechs (when assigning PRUs to any aerospace unit beyond a fighter, each PRU weighs .25 tons; fighters ignore this weight restriction).

If the pilot of a fighter ejects with a PRU, apply a +1 modifier to the Control Roll to avoid damage during the ejection. A pilot exiting a Small Craft or Large Craft with a PRU is considered two people for purposes of how many people can exit in a turn (see *Large Craft*, p. 27).

If a pilot with a PRU is unconscious when he or she enters a Space/Atmosphere Interface hex, that pilot is automatically killed.

A conscious pilot with a PRU who enters a Space/Atmosphere Interface hex must make a Control Roll. Apply a +1 modifier for

each box of damage the person has taken. Additionally, for fighter pilots, apply a +2 modifier; for any other person, apply a +4 modifier.

If the roll is successful, the pilot enters the atmosphere. The marker for the pilot has a Velocity of 0 and the pilot falls toward the ground, supported by his parachute, using the same rules as for dropping troops (see *Atmospheric Drops*, p. 22). If the pilot has no parachute, when it is time to make a landing roll, the pilot is killed.

If the roll fails, the pilot is killed.

LARGE CRAFT

In the Movement Phase, some or all of a unit's crew may be ordered to abandon ship. When abandoning ship, make a Control Roll for the unit. A success indicates that for every full 100,000 tons of a unit, 1 + MoS lifeboats or escape pods may launch safely. Additional lifeboats or escape pods may launch in the same turn, but each must make a Piloting Skill Roll at a +2 modifier (+5 in the case of a lifeboat being employed by a unit in an atmospheric row or space/atmosphere interface hex), suffering a point of standard-scale damage for each point of the MoF (standard life boats and escape pods have an SI of 1 and an Armor Value of 4). When abandoning a Large Craft, place a marker for each pod or boat on the map. In a space hex, each starts with the heading and velocity of its parent unit. It should be noted that lifeboats, though better able to support their occupants for longer periods than escape pods, cannot maneuver, nor can they survive re-entry and are automatically destroyed if they move into a Space/Atmosphere interface hex.

In atmosphere, escape pods also begin with the same heading and velocity as their parent unit but fall under the influence of gravity (see p. 80, *TW*) if their velocity drops below 2. Lifeboats employed in atmosphere have a Velocity of 0 and automatically fall under the influence of gravity, sustaining a point of damage per atmospheric hex fallen (or 3 altitude levels if using Low-Altitude Movement, including falling into the ground hex). Parachutes allow lifeboats and escape pods to land if they enter a ground hex with at least 1 point of standard-scale armor remaining.

Crewmen can put on spacesuits and exit any Large (or Small) Craft. At the start of a space turn, the player announces how many crewmen will be exiting in this fashion (up to 50 per turn). For that space turn, those crewmen are considered wounded for purposes of Piloting and Gunnery Skill Rolls; use the Crew Losses and Crew Hits rules (see p. 206, *TO*); round normally. During the End Phase of that space turn, the crewmen designated by the player are ejected; treat all such crewmen as ejected fighter pilots (see above).

A Feng Huang *WarShip has taken crippling damage and its controlling player wants to protect as many crewmen as possible. During the next turn's Movement Phase, he makes a Control Roll with an MoS of 2. Checking the tonnage on his* Feng Huang*, he sees it is 970,000 tons. He quickly figures that he can eject 27 escape pods or lifeboats safely this turn [1 (base number) + 2 (MoS) = 3 x 9 (1 per each full 100,000 tons) = 27]. The controlling player ejects all 24 lifeboats and then 3 more escape pods; he determines this is all crew and not any battle armor troopers or pilots/technicians.*

Next turn the player attempts one final weapons attack. He ejected 162 crewmen the previous turn [144 (24 life boats x 6) + 18 (3 escape pods x 6) = 162]. The Feng Huang *has a total crew of 1,044 (again, not counting battle armor troopers, or pilots and technicians). Dividing the 162 by 1,044 shows that 15.5 percent (rounded to 16 percent) of the crew is no longer on board. Checking the Crew Casualties Table on page 206 of* Tactical Operations *equates to a single crew hit the controlling player must take into consideration when making his weapon attacks this turn.*

FIGHTER SQUADRONS

Though many battles involve only a handful of fighters, battles involving DropShips and WarShips can include hundreds of these smaller units. It would be impractical to manage such large numbers of individual fighters using the standard rules, so the following abstract rules provide an alternative system. The goal of these rules is to group the fighters into units and then maneuver and fight with these formations rather than individual fighters. All fighters in a squadron need not be the same type, though they often are.

Terminology: For these rules, the term "squadron" is used for any formation involving 2 or more fighters.

Maximum Squadron Size: For formations larger than 6, divide the formation into two squadrons. For example, "in universe," the Clans field aerospace Stars (equivalent to a squadron) of 10 fighters each, but in game terms that would be represented by 2 squadrons of 6 fighters and 4 fighters each, with players using two Squadron Record Sheets to track the 10 fighters.

CREATING A FIGHTER SQUADRON

Determine the statistics of a fighter squadron as follows; it is beneficial to have a copy of the Squadron Record Sheet at hand to fill out at each stage of the process.

Choose Fighters

If the player does not have a pre-existing fighter squadron, he or she should choose the fighters for one. A host of different fighters appear in *Technical Readout: 3039*, *Technical Readout: 3050 Upgrade*, *Technical Readout: 3055 Upgrade*, *Technical Readout: 3067* and *Technical Readout: 3075*. Players can also find record sheets for those fighters for sale in various Record Sheet PDFs at http://www.battlecorps.com/catalog.

Using the Recommended Fighter Squadron Formation Table (see p. 28), players can match the proper squadron size with their desired faction. Then they can simply pick and choose which fighters they wish to field or which are appropriate. Players can also use the Random Aerospace Assignment Tables found starting on page 271 of *Total Warfare* or page 51 of this book to quickly generate an appropriate squadron of fighters. As noted above, all the fighters in a squadron need not be the same type (though it is easier to pick fighters for a squadron that way), but each pair of fighters within the squadron must be the same type (though not necessarily the same variant/configuration).

Capital Fighters

Fighters converted to squadron stats are called Capital Fighters to distinguish them from those using Standard Rules, *Total Warfare* stats. Although Capital Fighters are normally deployed in squadrons according to the Recommended Fighter Squadron Formation Table (at right), they may be deployed individually; in effect, becoming single-fighter squadrons. A single Capital Fighter acts as a one fighter squadron and follows all the standard fighter squadron rules.

Armor

Total the individual armor values of each fighter in the squadron by adding the armor on each facing of every fighter (Technical Readouts will already have this totaled as the Armor Factor). For each fighter, then convert that armor value to capital-scale; divide the total by 10, rounding to the nearest whole number (with a minimum value of 1). Enter this data on the record sheet under the corresponding fighter's Total Armor entry, then cross off any excess armor squares under that value.

Fatal Threshold: Fatal Threshold determines when a fighter must roll for destruction (see *Fighter Squadron Critical Hits and Fatal Threshold Damage*, p. 32). To determine this value, divide the total capital-scale armor by 4 and round up to the nearest whole number with a minimum value of 2; enter this data on the record sheet next to the Total Armor entry for each fighter.

> *After glancing through* Technical Readout: 3075, *Joel decides to build a Word of Blake squadron to play in one of the tracks from a* Jihad Hot Spots *sourcebook. The squadron contains a pair of S-HA-OA* Shades, *a pair of S-RSL-O* Rusalkas *and pair of S-STR-OE* Strigas.
>
> *With a blank Squadron Record Sheet at hand, he notes down the names of the fighters, and then because he has the Technical Readout at hand, he looks at each entry to find the Armor Factor, which is the total armor value of all facings. This gives him the following values: 116 for each* Shade, *215 for each* Rusalka *and 322 for each* Striga. *Joel then generates capital-scale damage values, resulting in the following for each fighter type: 12 [116 (*Shades' *total armor value) ÷ 10 = 11.6, rounding to 12], 22 [215 (*Rusalkas' *total armor value) ÷ 10 = 21.5, rounding to 22] and 32 [322 (*Strigas' *total armor value) ÷ 10 = 32.2, rounding to 32]. Looking at the record sheet, Joel notes that information in the correct spot and then crosses off the excess armor squares unused by each fighter.*
>
> *Determining the Fatal Threshold for each fighter, Joel finds the* Shades *have a Fatal Threshold of 3, the* Rusalkas *6 and the* Strigas *8, all of which he notes next to each Total Armor value.*

Weapons

Like battle armor, fighter squadrons use the Cluster Hits Table for each weapon bay of the same weapon type to determine the total amount of damage actually applied to the target after a successful attack (see *Fighter Squadron Attacks*, p. 30). As such, each fighter groups its weapons into three types of weapon bay arcs: Nose (all Nose-mounted weapons), Wing (all forward firing Wing-mounted weapons) and Aft (all Aft and Aft-mounted Wing weapons). Then total the Heat values for each type of weapon bay and add the AV and Range for a single weapon (see record sheet example, p. 30). Once all such details are known, note them, along with the location and range of the weapon bay, under the corresponding fighter's entry on the record sheet (noting ammo in brackets).

RECOMMENDED FIGHTER SQUADRON FORMATION TABLE

Affiliation	Force Size (Fighters per Squadron)
Clan Star (All)	10 (Split 5/5 or 6/4 in two squadrons)
Inner Sphere	
Generic/Mercenary	6
Capellan Confederation	6
Draconis Combine	6
Federated Suns	6
Free Rasalhague Republic	4
Lyran Alliance	6
ComStar/Word of Blake	6
Periphery (General)*	6
Marian Hegemony	10 (Split 5/5 or 6/4 in two squadrons)
Taurian Concordat	4
Calderon Protectorate	4

Additional Formations	Force Size (# of Fighters)
Clan Aerospace Point	2
Inner Sphere Flight	2
Capellan Flight	3

*Includes Circinus Federation, Magistracy of Canopus, Niops Association, Outworlds Alliance, Nueva Castile, Hanseatic League and pirates

If any squadron members are carrying external stores, group all like types of external stores in the same fashion as weapons in the other arcs. External Stores is labeled as Bomb under the "Arc" column. If carrying external stores, be sure to put the modified Safe Thrust in parentheses after the Safe Thrust and Maximum Thrust entries. To be able to launch external stores in combat, a squadron must be carrying identical stores. They may carry more than one type of stores, but each fighter must carry the same type and number.

As detailed under Weapons, under Fighter Squadron Critical Hit Effects (see p. 32), if a fighter takes a Nose or Aft weapon bay critical hit, all weapons in that location are destroyed. However, if a fighter takes a Wing weapon bay critical hit, the first critical halves the damage of the weapon bay and the second critical hit destroys all Wing-mounted weapons on that fighter. As such, when noting weapon bays for Wings, the players should note the one half of the weapon count after the total number and note the "half" Heat value in parentheses (to be used once a first Wing weapon critical hit occurs), so such information is readily available without having to do math on the fly during the game.

Once each individual fighter's information has been determined, fill out the Squadron Data section on the record sheet with the summary information for each unique weapon bay type. For example a squadron with 10 wing-mounted medium lasers, 6 wing-mounted small lasers, 12 wing-mounted SRM 6s and 12 nose-mounted medium lasers will have four bays in the Squadron Data section, one for each unique weapon type/location.

Maximum Damage Threshold: Squadrons, due to their dispersion of fire, inflict damage as solitary fighters for purposes of determining whether a squadron's attack exceeds a target's Damage Threshold (see p. 239, *TW*). Thus, only the Attack Value of a single fighter's weapon bay is compared to the target's Damage Threshold regardless of how many functional fighters are in the squadron. This Attack Value is noted in the MDT column of each weapon bay in the Squadron Data section of the record sheet.

Looking at his six fighters, Joel first determines the specific weapon bays for each individual fighter. For both Shades*, he comes up with the following: a Nose bay with an LRM-15 w/Artemis, and a Wing 4(2) ER medium laser bay; he remembers to enter the single wing weapon count for ease of record keeping. For both* Rusalkas*, he determines the following: an ER PPC Nose bay, a Nose LRM-15 w/Artemis bay, a Wing 4 (2) ER medium laser bay, a 2(1) medium pulse laser Wing bay and an ER small laser Aft bay. Finally, for both* Strigas*, he gets the following bays:a Nose 3 light Gauss rifle bay and a Wing 4(2) ER medium laser bay. He writes down the specific weapon bay, ammo and location information for each of the fighters in the squadron, under the Weapons and Equipment and Loc columns.*

Joel then determines the heat for each weapon bay and writes that down under each corresponding fighter, in the Ht column. For both Shades*' weapon bays, he writes down 5 for the Nose LRM-15 w/Artemis bay and 20 for the Wing ER medium laser bay. Joel remembers that a Wing bay can take two critical hits before being destroyed and so changes the 20 value to read "20 (10)" in the Ht column. For both* Rusalkas*' weapon bays, he writes 15 for the Nose ER PPC bay, 5 for the Nose LRM 15 w/Artemis bay, 20 (10) for the Wing ER medium laser bay, 8 (4) for the Wing medium pulse laser bay and 2 for the Aft ER small laser bay. Finally, for both* Strigas*' weapon bays, he writes 3 for the Nose light Gauss rifle bay and 20 (10) for the Wing ER medium laser bay.*

Next, he figures the Attack Value and range generated for each weapon type, which he writes down under each fighter in the AV/Range column. For both Shades*' weapon bays: 12/Long for the Nose LRM-15 w/Artemis and 5/Medium for the Wing ER medium laser bay. For the* Rusalkas*' weapon bays: 10/Long for the Nose ER PPC bay, 12/Long columns for the Nose LRM-15 w/Artemis bay, 5/Medium for the Wing ER medium laser bay, 6/Short for the Wing medium pulse laser bay and 3/Short for the Aft ER small laser bay. For the* Strigas*' weapon bays: 24/Extreme for the Nose light Gauss rifle bay and 5/Medium for the Wing ER medium laser bay.*

In addition to each fighters weapons, Joel has decided to outfit his fighters with external stores. The rules require him to use all the same stores for each fighter. Looking at his fighters he sees that the Shades *have the smallest bomb potential (see pg. 245,* TW*), each shade can carry the equivalent of seven bombs. He decides to equip each fighter with a single Anti-Ship Missile (equal to 6 bomb slots) and 1 HE Bomb.*

With all the appropriate information now filled out for each fighter, he then sums up the stats for each weapon bay to write in the Squadron Data section. For the Nose section: 4 LRM-15 w/Artemis, 2ER PPC and 6 Light Gauss Rifle. For the Wing section: 24 ER Medium Laser and 4 Medium Pulse Laser. For the Aft section: 2 ER Small Laser. Finally, for Bombs: 1 AS Missile and 2 HE Bomb.

Finally, Joel mentally notes that the Maximum Damage Threshold of each bay is equal to the Attack Value for each weapon bay. He then fills in the AV Each column with these values for ease of reference: 12 for the Nose LRM-15 w/Artemis bay, 10 for the Nose ER PPC bay, 8 for the Nose light Gauss rifle bay, 5 for the Wing ER medium laser bay, 6 for the Wing medium pulse laser bay, 3 for the Aft ER small laser bay, 30 for the AS Missiles and 10 for the HE Bombs.

Heat Sinks

Fighter squadrons use the same heat rules as Large Craft (see p. 161, *TW*), except heat is calculated by weapon bay, not arc. Fighter squadrons that lack sufficient heat sinks to fire all weapon bays may still overheat. If the player chooses to fire more bays than the fighter squadron's heat sinks can dissipate, the fighter squadron will overheat by the difference and the player must make an immediate Control Roll, applying a +1 modifier for every 15 points (or fractions there of) by which it overheated. This overheat effect is cumulative, and any remaining heat will carry over into the next turn. Overheat is tracked on the Velocity Record on the record sheet.

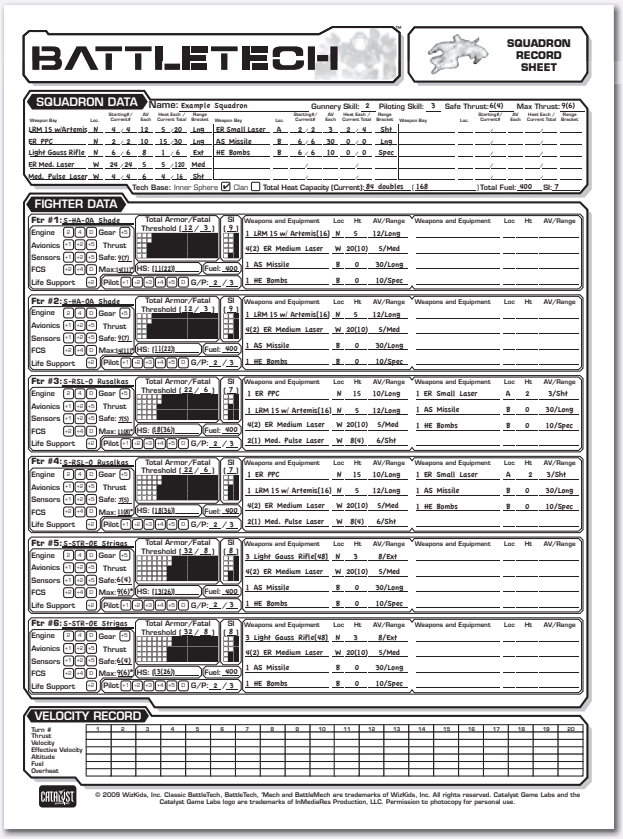
When heat sinks on a fighter are destroyed—or when a fighter is destroyed—the heat sinks are recalculated based on the remaining heat sinks/fighters. Record heat sink information in the squadron summary section of the record sheet and on each fighter's stat block.

Joel adds all the heat sinks of his six fighters to find the total value for his squadron and comes up with 84 heat sinks (11 doubles for each Shade*, 18 doubles for each* Rusalka *and 13 doubles for each* Striga*). He writes that value down on the record sheet, in the Squadron Data section, as well as the fighter squadron's total heat capacity, which is 168, and then checks the double heat sinks box. If any of the fighters mounted single heat sinks, Joel would have needed to track the double and single heat sinks separately for purposes of damage and heat dissipation*

Gunnery and Piloting Skills

The Gunnery and Piloting Skills of a squadron are the average of all Gunnery and Piloting Skills of the pilots that make up the squadron. If the Piloting and Gunnery Skills of each pilot are not yet determined, those values should be determined now. Players can either assign values, or they can use the Random Experience Rating Table and Random Skills Table (Expanded) (see p. 273, *TW*) to generate those values. Once the values are determined, add the Gunnery and Piloting Skills separately, dividing by the number of fighters in the squadron (rounding down to the nearest whole number) to determine the average skills of the squadron.

Joel decides to randomly roll on the Veteran column of the Random Skills Table (Expanded) and comes up with the following Gunnery and Piloting Skills: 3/4, 2/4, 3/2, 1/3, 3/5 and 2/3. He first adds the Gunnery Skills to arrive at 2 [3 + 2 + 3 + 1 + 3 + 2 = 14 / 6 = 2.3, rounding down to 2]. Then


BATTLETECH

SQUADRON RECORD SHEET

SQUADRON DATA

Name: Example Squadron | Gunnery Skill: 2 | Piloting Skill: 3 | Safe Thrust: 6(4) | Max Thrust: 9(6)

Weapon Bay	Loc.	Heat Gun/Current	Short	Medium	Long	Weapon Bay	Loc.	Heat Gun/Current	Short	Medium	Long
LRM 15 w/Artemis	N	4 / 4	12	5	20	ER Small Laser	A	2 / 2	3	2	4
ER PPC	N	2	10	15	30	AS Missile	B	6 / 6	30	0	0
Light Gauss Rifle	N	6 / 6	8	1	6	HE Bombs	B	6 / 6	10	0	0
ER Med. Laser	W	24 / 24	5	5	10						
Med. Pulse Laser	W	4 / 4	4	4	16						

Tech Base: Inner Sphere ☑ Clan ☐ Total Heat Capacity (Current): 84 doubles (168) | Total Fuel: 400 | SI: 7

FIGHTER DATA

Ftr #1: S-HA-0A Shade | Total Armor/Fatal Threshold: 12 / 3 | SI: 9 | Max: 1112 | HS: 11 (123) | Fuel: 400 | G/P: 2 / 3

Weapons and Equipment	Loc	Ht	AV/Range
1 LRM 15 w/ Artemis(16)	N	5	12/Long
4(2) ER Medium Laser	W	20(10)	5/Med
1 AS Missile	B	0	30/Long
1 HE Bombs	B	0	10/Spec

Ftr #2: S-HA-0A Shade | Total Armor/Fatal Threshold: 12 / 3 | SI: 9 | Max: 1112 | HS: 11 (123) | Fuel: 400 | G/P: 2 / 3

Weapons and Equipment	Loc	Ht	AV/Range
1 LRM 15 w/ Artemis(16)	N	5	12/Long
4(2) ER Medium Laser	W	20(10)	5/Med
1 AS Missile	B	0	30/Long
1 HE Bombs	B	0	10/Spec

Ftr #3: S-RSL-0 Rusalka | Total Armor/Fatal Threshold: 22 / 6 | SI: 7 | Max: 1188 | HS: 6 (136) | Fuel: 400 | G/P: 2 / 3

Weapons and Equipment	Loc	Ht	AV/Range	Weapons and Equipment	Loc	Ht	AV/Range
1 ER PPC	N	15	10/Long	1 ER Small Laser	A	2	3/Sht
1 LRM 15 w/ Artemis(16)	N	5	12/Long	1 AS Missile	B	0	30/Long
4(2) ER Medium Laser	W	20(10)	5/Med	1 HE Bombs	B	0	10/Spec
2(1) Med. Pulse Laser	W	8(4)	6/Sht				

Ftr #4: S-RSL-0 Rusalka | Total Armor/Fatal Threshold: 22 / 6 | SI: 7 | Max: 1188 | HS: 6 (136) | Fuel: 400 | G/P: 2 / 3

Weapons and Equipment	Loc	Ht	AV/Range	Weapons and Equipment	Loc	Ht	AV/Range
1 ER PPC	N	15	10/Long	1 ER Small Laser	A	2	3/Sht
1 LRM 15 w/ Artemis(16)	N	5	12/Long	1 AS Missile	B	0	30/Long
4(2) ER Medium Laser	W	20(10)	5/Med	1 HE Bombs	B	0	10/Spec
2(1) Med. Pulse Laser	W	8(4)	6/Sht				

Ftr #5: S-STR-0E Striga | Total Armor/Fatal Threshold: 32 / 8 | SI: 8 | Max: 1760 | HS: 13 (264) | Fuel: 400 | G/P: 2 / 3

Weapons and Equipment	Loc	Ht	AV/Range
3 Light Gauss Rifle(48)	N	3	8/Ext
4(2) ER Medium Laser	W	20(10)	5/Med
1 AS Missile	B	0	30/Long
1 HE Bombs	B	0	10/Spec

Ftr #6: S-STR-0E Striga | Total Armor/Fatal Threshold: 32 / 8 | SI: 8 | Max: 1760 | HS: 13 (264) | Fuel: 400 | G/P: 2 / 3

Weapons and Equipment	Loc	Ht	AV/Range
3 Light Gauss Rifle(48)	N	3	8/Ext
4(2) ER Medium Laser	W	20(10)	5/Med
1 AS Missile	B	0	30/Long
1 HE Bombs	B	0	10/Spec

VELOCITY RECORD

Turn #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Thrust																				
Velocity																				
Effective Velocity																				
Altitude																				
Fuel																				
Overheat																				

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Joel adds the Piloting Skills to arrive at 3 [4 + 4 + 2 + 3 + 5 + 3 = 21 / 6 = 3.5, rounding down to 3].

Joel writes 2 and 3 on the Gunnery Skill and Piloting Skill lines in the Squadron Data section of the record sheet.

Finishing the Record Sheet

Fighter squadrons use the Safe and Maximum Thrust values of the slowest fighter. Determine which is the slowest and note that detail on the record sheet. If using the optional fuel rules (see p. 34), the fuel capacity of the fighter with the least amount of fuel available applies. Finally, if the squadron is carrying external stores, notate the adjusted Safe Thrust in parentheses after the entry for Safe Thrust; calculate the modified Maximum Thrust and notate that in parentheses after the Maximum Thrust entry.

The squadron's Structural Integrity (SI) is equal to the lowest SI of any fighter; note that detail on the record sheet.

Finally, the player should check whether the squadron has a Clan or Inner Sphere technology base, as well as naming the squadron (if the player so desires).

Joel determines that the Striga *has a Safe Thrust of 6 and a Maximum Thrust of 9. As those are the lowest values of his six fighters, he writes that down on the record sheet. He then checks for the SI: the Shade has a 9, while the* Rusalka *has a 7 and the* Striga *has an 8; the* Rusalka*'s is the lowest, so he writes that value down on the record sheet.*

Each fighter has seven bomb slots filled, this reduces their Safe Thrust by 2, giving a final value of 6 (4) for the Striga*, 7 (5) for the* Ruskala *and 9 (7) for the* Shade*, with each fighters Maximum Thrust recalculated accordingly. The Striga is still the slowest fighter, so the Squadron Data is filled in with 6 (4) for Safe Thrust.*

Joel notes down the fuel points for each fighter; as all fighters have the same value, that is the value used under the Squadron Data (in this case 400).

Finally he checks the Inner Sphere technology box and names his squadron: Ghostriders.

USING A FIGHTER SQUADRON

Use the following rules for movement and combat involving fighter squadrons.

Movement

Fighter squadrons use all the same movement rules as standard fighters, except that a squadron is considered a single unit for Initiative and movement. When a player nominates a unit to move and chooses a fighter squadron, the entire unit is moved as one.

Per standard rules, a Control Roll is made for any thrust spent in excess of the fighter squadron's SI, as determined under *Finishing the Record Sheet* (at left).

Launching/Recovering Fighters: When launching or recovering fighters, if a squadron cannot be launched or recovered in its entirety, the remaining fighters are not counted in the squadron for movement and attack purposes. For example, if a Large Craft can only launch 4 of the 6 fighters of a squadron in a single turn, the squadron only contains 4 fighters until the remaining 2 fighters are launched.

Fighter Squadron Attacks

Unless stated otherwise, fighter squadrons follow all the standard applicable rules for weapons fire, to-hit procedures and so on as standard fighters.

A fighter squadron has two firing arcs: front and aft. Looking at the Aerodyne Firing Arcs Diagram on page 236 of *Total Warfare*, the "Nose & Left Wing," "Nose & Right Wing & Left Wing" and "Nose & Right Wing" arcs are all combined into a single front arc. Likewise, the "Aft & Left Wing (A)", Aft & Right Wing (A) & Left Wing (A)" and "Aft & Right Wing (A)" arcs are all combined into a single aft arc. Both the Nose and Wing weapon bays fire into the entire front firing arc. Missile external stores may fire into the Front arc. Bombs may be deployed per Space Bombing (see p. 116), except as noted below.

When deploying missile external stores, the player fires them in salvos equal to one store per active fighters still equipped with that store. So a six fighter squadron with 18 High Explosive Bombs could fire three salvos of six bombs each, while a four fighter squadrons carrying AAA missiles would fire a salvo of four, and the same squadron where one fighter had taken a bomb critical on its AAA missile bay, would only fire a salvo of three missiles. Expended stores are marked off on the Fighter Data block and Squadron Data block.

When the controlling player of an attacking fighter squadron unit announces a weapon attack, he chooses a weapon bay to fire; that is, all fighters in the squadron fire the same type of weapon bays at the same target. This can easily be tracked in the Squadron Data section of the record sheet. The number of weapon attacks a fighter squadron unit can make depends on how many squadron weapon bays are available in the firing arc in which the target is located (remembering that a fighter squadron cannot overheat when firing bays), as well as the range to the target. The controlling player makes a separate to-hit roll for each squadron weapon bay that he chooses to fire.

When a fighter squadron hits with a weapon bay, consult each fighter's entry and total up the number of active weapons in the bay. Using the total number of weapons, roll 2D6 and consult the appropriate column of the Cluster Hits Table corresponding to the number of active weapons in the bay to determine how much of the squadron's fire actually struck the target. Missiles that miss their target detonate harmlessly.

Once that number is determined, the attacker then rolls to determine the specific location for that damage, which is applied as a single block of damage to that location. External stores salvos strike a single location the same as other squadron attacks.

Fighter Squadrons conducting Air-to-Ground Attacks are treated as individual Standard Rules fighters each making a separate identical attack (Bombing, Striking, Strafing) on the target or hex. Damage from a successful Strike or Strafe attack is divided into 5-point Damage Value groupings; bomb attacks follow standard bombing rules (see p. 245, *TW*). In addition, because the squadron is flying in formation and in a predictable pattern, any Ground-to-Air attacks against a fighter squadron receive a –1 to hit modifier, in addition to any other standard modifiers for such an attack.

Maximum Damage Threshold: As noted under Weapons (see p. 28), the ability of a fighter squadron to inflict a potential critical hit through exceeding a target's Damage Threshold (see p. 239, *TW*) is based on the maximum Attack Value of a single weapon in the firing bay, this is the AV value for each bay, as noted in the Squadron Data section of the record sheet. When a player makes an attack against a target whose Damage Threshold in the struck location is higher than the Maximum Damage Threshold of that weapon bay, then no potential critical hit is inflicted through exceeding a Damage Threshold, regardless of how much damage the target takes.

If using the Variable Damage Thresholds rules (see p. 117), when a player makes an attack against a target whose current Damage Threshold is greater than the Maximum Damage Threshold of the fighter squadron weapon bay making the attack, regardless of how much damage is done to the target, no potential critical hit is inflicted through exceeding a Damage Threshold. If the current Damage Threshold in the struck location has a value equal to or less than the Maximum Damage Threshold of the fighter squadron weapon bay making the attack, then if the total damage of the attack exceeds the current Damage Threshold, a potential critical hit for surpassing Damage Threshold is achieved. If the damage grants an automatic critical hit chances—such as an Anti-Ship Missile—roll for these chances normally, for each missile that hits the target.

Targeting Computers: Fighter squadrons only gain the benefit of targeting computers (–1 to-hit modifier on appropriate weapons) if at least half (round up) the active members have a targeting computer.

Joel is in the thick of a battle and his fighter squadron is targeting an enemy Achilles *DropShip that has just entered the fray during Turn 3. He's already lost one fighter (the* Shade *in Slot 2) and so his squadron of six has become a squadron of five. He already launched all his external stores, so those are not available to him. Additionally, the* Shade *in Slot 1 has taken two armor hits, three heat sink hits and a Wing weapon critical hit, so the ER medium laser bay on that Fighter generates only 10 heat and 10 damage (as opposed to the standard 20 heat and 20 damage).*

The DropShip is at medium range and in the fighter squadron's front arc, and so Joel opens up with as many weapon bays as he can without overheating. With damage, the 84 starting double heat sinks are now 70 double heat sinks, giving him a total heat capacity of 140. After playing with numbers quickly, Joel decides not to fire the ER PPC bay, and the medium pulse laser bay is out of range, leaving him with the LRM-15 w/Artemis, ER medium laser and light Gauss rifle bays, which will add up to 111 heat (remembering that the Shade *in Slot 1 is only generating 10 heat for its ER medium laser bay); this is just inside the 116 maximum heat the fighter squadron can generate per turn.*

He makes an attack with all three weapon bays; he misses with the LRM 15 w/ Artemis, but the other two bays strike the target! Looking at his fighter squadron sheet, Joel notes that the ERML Wing bay has 18 lasers still active. As such, Joel rolls 2D6 on the 18 column of the Cluster Hits Table, with a result of 9, meaning 14 of the 18 ER medium lasers strike the target. Adding the Attack Values for the fourteen ER medium lasers that did strike the target creates a final Attack Value of 70 (14 x 5 AV = 70). Joel then rolls for a hit location on the appropriate column of the Aerospace Units Hit Location Table and comes up with a result of 9: Left Side, which translates into a Left Wing for an Aerodyne DropShip. The controlling player of the Achilles *DropShip assigns 70 points of standard-scale damage as a single hit to that location, reducing the damaged armor from 250 down to 190. The Damage Threshold of the armor in that location on the* Achilles *was 26; since the Maximum Damage Threshold of the ER Medium Laser bay is only 5, there is no potential for a critical hit due to exceeding that location's Damage Threshold.*

Joel then fires the bay of 6 light Gauss rifles and so he rolls on the 6 column of the Cluster Hits Table. He gets a result of 5. He consults the 6 column of the Cluster Hits Table (number of active light Gauss rifles) and sees that only three rifles (one fighters worth) struck the target. Multiplying the AV Each value of 8 by 3 he gets a total Attack Value of 24. Joel rolls a 10 for hit location, resulting in 24 points of damage being assigned to the Left Wing again, reducing the armor from 180 to 156. Even though they are playing with Variable Damage Thresholds, the current Threshold of that location is 18, which is well below the MDT of 8 for a light Gauss rifle bay, and so there is no potential for a critical hit for damage exceeding that location's Damage Threshold.

During Turn 4, Joel's fighter squadron remains in the same condition from last turn and once again he sets his sights on the Achilles *DropShip. The DropShip is in the fighter squadron's front arc and this time the direction of attack is on the already damaged Left Side, but the range is long, meaning that the powerful ER medium laser bay is out of range. Joel fires the ER PPC bay this time, along with the LRM-15 w/Artemis and the light Gauss rifle bays. The total heat is 51, well within the squadron's 140 heat capacity. The ER PPC bay fails to hit, but Joel strikes the DropShip with the LRM-15 w/Artemis and light Gauss rifle bays.*

Joel decides to determine the light Gauss rifle bay first; he already knows to roll 2D6 on the 6 column of the Cluster

Hits Table. He gets a result of 11; all six rifles strike the target! He then rolls a 7 on the Hit Location Table, and the controlling player of the DropShip applies the 48 Attack Value of the six rifles (AV Each of 8 times 6 light Gauss rifles) as a single block against the Left Wing, taking its 156 armor down to 108. As before, the 8 Maximum Damage Threshold of the light Gauss rifle bay means it cannot potentially cause a critical hit through exceeding the Damage Threshold of that location.

Joel then looks at the squadron record sheet to determine that there are three active fighters with an LRM-15 w/Artemis bay (in slots 1, 3 and 4). He rolls 2D6 with a result of 7, and consults the 3 column of the Cluster Hits Table; two fighters struck the target. He then adds the Attack Value of the LRM-15 w/Artemis from the fighters in slots 1 and 3, providing a final Attack Value of 24. Joel rolls for location and gets a 6: the Left Wing again! The controlling player reduces that location's 108 armor to 84. This time, however, the current Damage Threshold of the DropShip's Left Wing at the time the LRM-15 w/Artemis bay's Attack Value is assigned is 12 [108 (current Armor Value) ÷ 10 = 11]. As 12 is the Maximum Damage Threshold of the LRM-15 w/Artemis bay, and that value is exceeds the current Damage Threshold, Joel has a chance to cause a critical hit by exceeding the Damage Threshold of that location!

Attacks Against Fighter Squadrons

When a unit attacks a fighter squadron, the attack targets the squadron as a whole, though individual fighters take the damage. A single fighter in the squadron cannot be the target of an attack; the fighter damaged by a successful attack is determined randomly. Use all standard modifiers.

On a successful attack against a fighter squadron, roll 1D6 for each Damage Value grouping to determine which fighters are hit. Each grouping strikes a different, randomly determined fighter. Re-roll if the squadron does not have that number of fighters or if the result indicates a fighter destroyed in the current or a previous phase. Any excess damage from a single damage grouping is wasted. A fighter is considered destroyed for the scenario after its last box of armor is marked off.

The following additional rules apply to attacks made against fighter squadrons.

- As described under Armor (see p. 28), each fighter armor box is at capital-scale; cross off one box for every 10 full points of standard-scale damage. As with standard rules (see *Scale*, p. 238, *TW*), total all the attacks to a single fighter by a single attacker, then divide by 10 and round normally (.5 rounded up). If a single attack is less than 5 points, no damage is applied. For example, a laser bay of three small lasers would inflict 1 point of damage [9 (standard-scale damage) ÷ 10 = .9, rounding up to 1], while a small laser fired by itself would not inflict any damage [3 (standard-scale damage) ÷ 10 = .3, rounding down to 0].
- The Aerospace Attack Direction Diagram (see p. 238, *TW*) has no effect on the damage applied to a fighter squadron, but does determine the location of possible critical and Fatal Threshold damage. See *Fighter Squadron Critical Hit Effects and Fatal Threshold Damage*, at right for more specific details on critical hits.
- Squadrons receive the +5 to-hit modifier when being attacked by capital-scale weapons and +3 when attacked by sub-capital weapons.
- Squadrons do not make Consciousness Rolls in the event of pilot hits.
- Squadrons do not take SI damage (though they do have an SI rating).
- Fighters in a squadron hit by heat-generating weaponry suffer damage instead of increased heat (for example, a fighter in a fighter squadron hit by a plasma cannon/plasma rifle suffers 1D6 points of damage rather than extra heat).

Fighter Squadron Critical Hits and Fatal Threshold Damage

Fighter squadron critical hits, while similar to those for individual fighters, have a few unique effects on squadrons as described below. Additionally, fighters in squadrons are also subject to a Fatal Threshold (see *Fatal Threshold*, below).

Standard critical hits against a fighter squadron may occur in the following two ways:

- Any single attack that destroys 2 points of a fighter's armor (at least 15 points of standard-scale damage).
- A natural 12 result on the dice roll.

In both instances, determine possible critical hits using standard rules (see *Critical Hits*, p. 238, *TW*). As usual, all critical hits are determined and assigned immediately.

Fatal Threshold: The Fatal Threshold represents an individual fighter taking enough damage in a single round to have lost all armor and SI from a single facing, thereby destroying the fighter. Fatal Threshold is determined after each individual attacking unit has finished its attack on a fighter squadron. Total the damage done to each fighter by the attacking unit. If the total damage is equal to or higher than the fighter's Fatal Threshold, the controlling player immediately rolls 2D6, adding a +1 for every full 2 points over the Fatal Threshold. On a result of 10+, the fighter is considered destroyed for the remainder of the scenario; when splitting a fighter squadron (see p. 33), for any fighter destroyed by a Fatal Threshold, roll 1D6 to randomly determine a facing and mark off all armor on that facing, reduce the fighters SI by half and assign 3 Engine hits.

Fighter Squadron Critical Hit Effects

A hit that inflicts critical damage has the following effects per the hit location roll made for the attack (see Hit Location Table, p. 237, *TW*). Squadron critical hits are against the individual fighter and may affect the fighter, the squadron or both.

Avionics: The flight computer of the fighter hit is damaged. This effect forces an immediate Control Roll for the squadron, applying all existing modifiers from the squadron, as well as +1 for every fighter that suffered a Control, Engine or Avionics critical hit in the same turn. If the roll fails, the squadron goes Out-of-Control (see p. 93, *TW*).

Bomb: A bomb hit destroys a randomly determined "Bomb" bay on that fighter's entry on the record sheet, rendering all bombs in that bay unusable.

Cargo: Same effects as *Total Warfare* (see p. 239, *TW*).

Control: The squadron must make an immediate Control Roll, applying all existing modifiers from the squadron, as well as +1 for every fighter that suffered a Control, Engine or Avionics critical in the same turn. If the roll fails, the squadron goes Out-of-Control (see p. 93, *TW*).

Crew: If a crew location takes a critical hit, cross off one pilot/crew status box. Each unit can sustain five Pilot/Crew hits; a sixth

hit kills the pilot. If a pilot is killed, remove that fighter from the squadron; it is considered destroyed for the scenario.

Engine: Against a fighter, each engine hit reduces the unit's Safe Thrust by 2 (meaning that the controlling player must also recalculate the Maximum Thrust, multiplying the new Safe Thrust by 1.5 and rounding up). If the Safe Thrust of the fighter is lower than the current Safe Thrust of the squadron, this becomes the new Safe Thrust for the squadron. Each engine hit also generates 2 points of heat, reducing the total heat sinks available to the squadron. If the Safe Thrust value is reduced to 0, the unit cannot spend thrust and the heat penalty remains in effect. Three engine critical hits destroy the fighter's engine, permanently shutting down the unit (see *Shutdown Effects*, p. 161, *TW*).

A fighter with no thrust or a destroyed engine may be detached from the squadron using the Splitting a Fighter Squadron rules (see p. 33).

FCS: The fire-control system is damaged. For every FCS hit to the squadron, apply a –1 modifier on the Cluster Hits Table roll for weapon attacks. This reflects the damage done to individual fighters that affects their aim. If an individual fighter in the squadron takes 3 or more FCS hits, it may no longer fire; the fighter is not considered when determining how many active weapons are available for a roll on the Cluster Hits Table for a attack of any kind.

A fighter with no FCS may be detached from the squadron using the Splitting a Fighter Squadron rules (see p. 33).

Fuel: Every time a Fuel Tank critical hit occurs, roll 2D6. On a result of 10 or more, the fuel tank explodes and that unit is destroyed.

Gear: The landing gear is damaged. This critical hit has no effect on the squadron, but will affect the individual fighter when it attempts to land after the squadron is broken up.

Heat Sink: For a standard-scale attack, this critical hit destroys a heat sink, reducing the amount of heat the craft can dissipate by 1 (or by 2 if the unit mounts double heat sinks). This critical hit destroys 10 heat sinks if the attacker uses a capital-scale weapon.

Sensors: The unit's sensors are damaged. For every sensor hit to the squadron, apply a –1 modifier on the Cluster Hits Table roll for weapon attacks. This reflects the damage done to individual fighters that affects their aim. An individual fighter can only take a total of three sensor hits; re-roll any subsequent sensor hit.

Thruster: The attitude control thrusters on the indicated side are damaged. No effect on a fighter in a squadron. Full effects apply to a fighter that is removed from the squadron.

Weapon: If a Nose or Aft weapon bay is hit, all weapons in this arc cease functioning. The first hit on a Wing weapon bay halves all weapon bay Attack Values from the Wing arc. The second time the arc is hit, all Wing weapon bays cease functioning. For example, in Joel's squadron, a *Rusalka* takes a weapon critical hit to the Nose and one to the Right Wing. The Nose ER PPC and LRM w/Artemis bays are destroyed, while the ER medium laser and medium pulse laser bays have their numbers halved, from 4 and 2 to 2 and 1 respectively. If the *Rusalka* takes another weapon critical hit to either wing, then its Wing weapon bays will be destroyed.

With only five fighters left in his squadron, Joel finally takes the punishment for tangling with an Achilles*-class DropShip, whose controlling player just rolled a great set of hits against his unit; Joel looks at his sheet to remind himself that the* Shade *in Slot 1 has taken 8 points of capital-scale damage in previous turns.*

The Achilles *hit Joel's fighter squadron with a 2 ER PPC bay, 2 ER large laser bay, a single ER PPC bay (a natural 12 to-hit roll result), an AC/20/Gauss rifle bay, a 2 LRM-20 w/ Artemis bay (another natural 12 to-hit roll result), and 2 medium pulse lasers. Though it won't matter for damage purposes, all the attacks struck the fighter squadron's right side.*

The controlling player of the Achilles *starts rolling locations. For the 2 ER PPC bay (with a capital-scale Attack Value of 2), he rolls a 1, and Joel assigns 2 points of the damage to the* Shade *in Slot 1 (the fighter was already down 8 armor squares). He marks off 2 points of capital-scale armor, and so his opponent immediately rolls for a critical hit, but barely gets one with a result of 8. He then rolls 2D6 again for a result of 7, comparing it to the Side Table of the Fighters portion of the Aerospace Units Hit Location Table, and comes up with Avionics; Joel checks off an Avionics hit in the Critical Damage portion of his fighter squadron record sheet.*

The opponent rolls for the 2 LRM-20 w/Artemis bay (capital-scale Attack Value 3) with a result of 4; Joel marks off 3 armor points on that Rusalka*. The opponent rolls 2D6 for a possible critical hit, but with a result of 3 doesn't get one.*

Next, the opponent rolls for the 2 ER large laser bay (capital-scale Attack Value 2) with a result of 3; Joel marks off 2 armor points on that Rusalka*. The opponent rolls 2D6 for a possible critical hit, but with a result of 5 doesn't get one.*

For the single ER PPC bay (capital-scale Attack Value 2), the dice roll for fighter location is 4, so Joel marks off 2 points of damage on that Rusalka*. The* Achilles *player gets two critical hit rolls (one for 2 points of damage and for natural 12). Luckily for Joel, the next dice roll result of 7 and 5 means no critical.*

For the AC/20/Gauss rifle bay (capital-scale Attack Value 4), the opponent rolls a 4., Joel marks off 4 damage points on the Rusalka *in that location. Once again, because that was more than 2 points of armor, the opponent rolls a possible critical hit, but with a 6 result comes up short. The Medium Pulse bay also hits the* Rusalka *in slot 4 for one point.*

For the final hit of the 2 LRM-20 w/Artemis bay (capital-scale Attack Value 3), the opponent rolls a 1. Joel marks off the 2 remaining armor points of damage, but the Shade *is destroyed, so the remaining point of damage from the 2 LRM-20w/Artemis bay is lost.*

Finally, now that all damage from a single attacker has been resolved, Joel determines if any Fatal Thresholds have been exceeded. Both of the Rusalkas *took damage but were not destroyed outright, and so Joel compares the damage inflicted against the Fatal Threshold of each fighter. The 2 damage points assigned to the* Rusalka *in Slot 3 doesn't equal or exceed its Fatal Threshold. However, the 10 damage points assigned to the* Rusalka *in Slot 4 exceed its Fatal Threshold of 6, and so Joel immediately makes a 2D6 roll and gets a result of 9. Since the damage*

to the Rusalka *is a full 3 points more than the Fatal Threshold, that applies a +2 modifier to the die roll, making it an 11. The fighter is destroyed!*

Despite the destruction of the Shade*, the squadron still must make a Control Roll for the Avionics hit.*

Wounded and down to three fighters, Joel's squadron still has some kick left it in for a few more turns.

SPLITTING A FIGHTER SQUADRON

The player controlling a fighter squadron can choose to break it into its constituent fighters and use the standard aerospace rules during the End Phase of any turn (provided all players agree), or at the end of a game. When the fighters are broken off from the squadron, or the squadron separates, each fighter operates as a Capital Fighter. To engage ground forces, the fighter must be converted to *Total Warfare* stats, and any critical damage takes effect per those rules at that time.

Alternatively, a single fighter can be removed from the squadron without breaking up the squadron. This is useful when one fighter is no longer operable.

FUEL CONSUMPTION (AEROSPACE UNITS)

In standard play, fuel is not taken into consideration for simplicity. However, the fuel reserves of aerospace units are often a critical factor in battle. Players can choose to account for fuel consumption in advanced-rules games with the following rules.

Tactical fuel efficiency is used during a scenario, while strategic fuel efficiency is used at all other times (in between scenarios). Both values are calculated at the start of a game.

The number of Fuel Points/Strategic Fuel Efficiency available to each unit depends on its type. The game statistics for aerospace fighters in the various Technical Readouts usually show the total fuel points available for a scenario. However, the Technical Readout game statistics for most aerospace units only show the tonnage devoted to fuel, not the corresponding fuel points/efficiency. Players therefore will need to use the appropriate construction rules to determine both the tactical and strategic fuel efficiencies. The Aerospace Fuel Table on p. 186 of *TechManual* covers standard-rules aerospace units, while the Advanced Rules Aerospace Units Fuel Table (see p. 147) covers aerospace units detailed in this volume.

Fuel Critical Hits: A critical hit to the fuel tank does not result in an explosion if the unit is out of fuel.

Running Out of Fuel: In tactical fuel efficiency, running out of fuel does not destroy the fighter, but removes the fighter from the scenario (the fighter is removed during the End Phase of the turn in which it spent its last fuel point). Refueling (see p. 35) to stay in the scenario must occur while the fighter still has fuel points. In strategic fuel efficiency, it is up to the players to determine the exact details of what happens when a Small or Large Craft runs out of fuel. Normally a captain would never allow such a situation to arise, as it almost assures the death of the entire ship (and ships are designed for extensive distance travel, with plenty of fuel reserves). However, such a situation may occur in a larger campaign setting.

TACTICAL FUEL EFFICIENCY

Each Thrust Point up to a unit's Safe Thrust rating used during a scenario consumes 1 point of fuel. For each Thrust Point used between the Safe Thrust Rating and the Maximum Thrust Rating, 2 points of fuel are consumed.

Conventional Fighters: Conventional fighters mounting ICE engines operating in an atmospheric hex reduce fuel costs to 0.5 (per Safe Thrust point; do not round fractions) and 1 (per point of thrust over Safe Thrust), representing the efficiency of their "air-breathing" engines.

Fusion-powered conventional fighters may, at the players' discretion, also benefit from increased fuel efficiency at low speeds (0.5 fuel points per point of thrust at or below Safe Thrust) but must still pay the full fuel cost for Thrust Points between the Safe Thrust Rating and the Maximum Thrust Rating.

Piloting Skill

The difference between a competent pilot and a good one is the ability to coax that little bit extra from his aerospace unit. Mostly this means being able to control the unit in difficult maneuvers, but it extends to more mundane—though no less significant—matters such as the consumption of fuel. A skilled pilot can eke out his fuel reserves, making efficient use of reaction mass to maneuver the unit.

At the start of each turn, the player may make a Control Roll for each unit he controls. Reduce the total fuel expenditure of the unit for the turn by the MoS (but not below more than half the normal fuel point cost, rounding up, and not below a single fuel point). Any fuel-consumption reductions not used in a turn are not carried over into future turns. If the Control Roll fails, add the MoF to the number of fuel points spent in that turn if the unit spent thrust.

A unit that does not spend thrust does not suffer this fuel-use "surcharge."

The controlling player of a fighter attempts to eke out some extra performance and makes a Control Roll, with a result of 7, which gives an MoS of 2. He may reduce the fuel point cost of any maneuvers the fighter makes by 2 points that turn. He spends 6 Thrust Points and would ordinarily have to expend fuel points, but his Piloting Skill reduces this to 4 points. Had he spent only 3 Thrust Points, the fuel cost would have been 2 points despite the 2-point reduction, as the fuel cost cannot be reduced below half the normal amount. Had he spent a single Thrust Point, the fighter would still need to expend 1 fuel point, as the amount of fuel used cannot be reduced below 1 point.

STRATEGIC FUEL EFFICIENCY

Large Craft crossing a planetary system (not in a combat situation in a scenario) use fuel more efficiently than when they are in combat. Fighters are not designed for travel through a planetary system and thus lack a strategic fuel use value. Small Craft are, however, equipped for such transits and thus have a strategic fuel use value.

The amount of fuel used in traveling is expressed in burn days. One burn day is equal to the number of tons of fuel used per day if traveling at 1G of acceleration. To determine the amount of fuel used during transit, multiply the burn day value by the number of days of travel and the G-rating. For example, a unit with a burn day value of 1.84 spends three days crossing a system at 2 Gs. This uses up 11.04 tons of fuel (1.84 x 3 x 2).

REFUELING

Units may refuel by landing on a friendly carrier and being refueled by the crews. This requires them to dock (and subsequently launch) according to the standard rules (see *Launching/Recovering Fighters/Small Craft*, p. 84, *TW*). The refueling action takes 1 space turn per ton of fuel loaded onto the fighter.

In-Space Refueling

Aerospace fighters may also carry out "in-space" refueling by docking with external fuel drogues, a faster and more efficient (but riskier) process. To do this, the fighter must match velocity and heading with a friendly carrier DropShip (any with fighter or Small Craft bays) and must be in the same hex. During the next turn, neither the fighter nor the DropShip may expend thrust or fire weapons. If either is forced to spend Thrust Points or make a Control Roll during the refueling process, the refueling fails automatically and the units must each make a test for collision per the Out-of-Control rules (see p. 92, *TW*). The pilot of the fighter must make a Control Roll during this turn. If the roll succeeds, the fighter may load a number of tons of fuel equal to 1+ the Margin of Success (but may not exceed its maximum fuel load). If the refueling Control Roll fails, no fuel is transferred between the DropShip and the fighter.

A Large Craft may simultaneously refuel one fighter for every six fighter/Small Craft cubicles it carries, to a maximum of six at any one time. Any attacks made against the Large Craft or fighter(s) during the refueling process may also cause damage to the other unit(s). Roll 1D6 for each successful attack. On a result of 1–5, it strikes the intended target. On a 6, it hits another target (determined randomly from the other fueling/tanker units in the hex) rather than the original target. For example, two weapons hit a DropShip that is refueling two fighters. The attacker rolls 1D6 for each attack, getting a 3 and a 6. The first attack hits the intended target (the DropShip), while the second hits one of the fighters, determined randomly.

Air-to-Air Refueling

Support units equipped with refueling drogues (see, p. 247, *TM*) may also refuel fighters (one per drogue) in an atmospheric hex. To do this, each fighter must match velocity and heading with the tanker and must end the turn in the same hex, and must stay that way for a total of six ground turns; that is, both the tanker and the refueling aircraft must spend the same amount of thrust and end the turn in the same hex for six turns. During the End Phase of the sixth turn, the fighter pilot must make a Control Roll. If the roll succeeds, the fighter may load a number of tons of fuel equal to 1 + every 2 Margin of Success points (but may not exceed its maximum fuel load). If the refueling roll fails, no fuel is transferred between the tanker and the fighter; the two aerospace units are still "lined up," however, and provided both units continue to spend the same thrust and end the turn in the same hex, they may continue to refuel. If the refueling roll failed by an MoF of 3 or greater, the six-turn count is lost; the fighter and tanker must spend another six turns lining up before the fighter can attempt to load any fuel.

Any attacks made against either unit during the refueling process may also cause damage to the other unit. Roll 1D6 for each successful attack. On a result of 1–3, it strikes the intended target. On a 4-6, it hits the other refueling target.

External Fuel Tanks

Fighters may carry fuel pods in lieu of bombs, with each tank holding 0.5 tons of fuel. Fuel from these pods is consumed before any fuel from internal tanks. If a fighter carrying external tanks sustains bomb critical damage, determine the damaged bomb randomly, including any external fuel tanks. If the damaged bomb is an under-wing fuel pod, the fuel contained in that external tank is lost.

External fuel tanks may be dropped using the rules for *Dumping Bombs* (see p. 247, *TW*) in the case of emergency bomb dumps, or *Dumping Ammunition* (see p.104, *TW*), in non-emergencies. Dumped fuel tanks–whether full or empty–do not inflict any damage when they land.

FUEL CONSUMPTION (ALL UNITS)

Players can choose to track fuel consumption of units not powered by fission, fusion or solar arrays. WarShips, DropShips, Small Craft, conventional fighters, aerospace fighters, Fixed-Wing Support Vehicles and Airships consume the fuel required to generate the thrust points used during a battle. JumpShips, Space Stations and Satellites consume fuel at a fixed rate, as described in their Technical Readout write-ups.

Other Support Vehicles participating in a battle or search and rescue operations (see *Search and Rescue*, p. 45) are assumed to use fuel sufficient to travel 500 km. Those not involved in combat during the current Maintenance/Repair Cycle (see *Time* p. 166) will also consume fuel sufficient to travel 50 km. Once these units run out of fuel, they cannot participate in operations until refueled. Equipment on Support Vehicles (such as a Mobile Field Base or operating theater) cannot be used during a Maintenance/Repair Cycle if the vehicle has no fuel. If a Support Vehicle has insufficient fuel to travel this distance, then the fuel tank will be emptied and the vehicle cannot participate in operations until after the next scenario and Maintenance/Repair Cycle. All fuel consumption rates are for Cruising movement rates; the rate of consumption is double at Flanking speed).

Combat Vehicles that require fuel consume an amount equal to 2 percent of their engine mass per scenario or search and rescue operation (see *Search and Rescue*, p. 45), or 1 percent if not involved in combat during the current Maintenance/Repair Cycle. Their fuel tank capacity is 10 percent of the engine mass. Like Support Vehicles, Combat Vehicles will not be available for duty if they run out of fuel. Motorized and mechanized conventional infantry units burn up .25 tons of fuel per Maintenance/Repair Cycle (see *Time,* p. 166)—which must be replenished for the next battle or they are relegated to operating as foot infantry.

Refueling requires 1 minute per 100 kg of fuel. It can be performed by the personnel assigned to the unit and does not require a Skill Check.

In-Flight Refueling: See above for space and atmospheric in-flight refueling.

Fuel Reserves: Players start a campaign with no fuel reserves apart from what is carried as cargo aboard the units that make up their battle group. Additional fuel can be acquired during play along with other supplies (see *Fuel (Optional)*, p. 179)

HARJEL

Discovered by Clan Diamond Shark on the planet Strato Domingo, the jellylike substance called HarJel posses a number of remarkable properties. When properly refined, HarJel retains a liquid state until exposed to vacuum conditions or an electric current of a specific amplitude. The Clans first used HarJel to create self-sealing bulkheads on spacecraft, but quickly adapted it for use in battle armor.

The following rules apply to all Clan DropShips, JumpShips, WarShips and Space Stations. Like Clan CASE, HarJel does not take up any tonnage or space (or cost), but is automatically included with any such aerospace unit.

- Ignore the first two Crew critical hits.
- When a Cargo critical hit occurs, double the unit's SI when determining the amount of cargo damaged (see p. 239, *TW*).
- When a Fuel critical hit occurs, the unit only explodes on a 2D6 result of 12.

GRAVITATIONAL EFFECTS

Aerospace fighters, as well as other aerospace units, can sometimes generate enormous acceleration and tolerate the results better than their fragile crews. High G-forces can impede the performance of aerospace crews and even cause them to pass out. The following rules simulate those effects.

Protected and Unprotected: By default, civilian aerospace unit crew are considered to be "unprotected"; that is, they are not equipped with suitable seating, "G-suits," and other protective equipment to help them endure high G-forces. Crews of military aerospace units with Safe Thrust ratings of 4 or less are also considered unprotected. Fighter pilots always have G-force protective equipment, as do crews of military aerospace units with Safe Thrust ratings of 5 or higher.

Clan Aerospace Phenotype: For a Clan Aerospace Phenotype pilot, add 2 to all Secondary and Primary Threshold numbers.

THRESHOLDS

Two levels of effects are provided below. The Secondary Threshold is the point at which crew performance becomes impeded, with penalties to Piloting and Gunnery target numbers. The Primary Threshold is when a crewman blacks out (or multi-person crews black out in sufficient numbers to similarly paralyze crew operations).

Secondary Threshold: When the Secondary Threshold is met or exceeded during a unit's Movement Phase, the crew suffers a +1 modifier to all Piloting and Gunnery target numbers that turn (effective as soon as the Second Threshold is met). For every 3 additional turns spent beyond the Secondary Threshold, increase the target number modifier by a cumulative +1.

For protected crewmembers, the Secondary Threshold is 12 thrust points per turn (6 Gs). For unprotected crewmembers, the Secondary Threshold is 6 thrust points per turn (3 Gs).

Primary Threshold: When the Primary Threshold is met or exceeded during a unit's movement phase, the crew (or a sufficient number of crewmembers) blacks out until the End Phase of the following game turn. While the crew is unconscious, the unit continues on the same heading and velocity at which it was moving when the crew blacked out.

For protected crewmembers, the Primary Threshold is 22 thrust points per turn (11Gs), while for unprotected crewmembers the Primary Threshold is 12 thrust points per turn (6 Gs).

INFANTRY VS. INFANTRY ACTIONS (EXPANDED)

The following rules modify the standard *Infantry Vs. Infantry Actions* rules (see p. 199, *TO*) as they pertain to JumpShips, WarShips and Space Stations.

Docking and Grappling Aerospace units

When randomly rolling a location for where a docking occurs, the roll applies regardless of the defending unit type; docking never occurs on the "broad side" of a WarShip, as captains are never suicidal enough to try to maneuver themselves in front of that many guns.

Attacks From Attacking and Defending Aerospace Units

When determining size classifications, JumpShips, WarShips and Space Stations are considered the same classification, and all are a bigger classification than DropShips.

Attacking a Docked/Grappled Unit

If the aerospace unit in question is two classifications smaller (a Small Craft to a JumpShip/WarShip/Space Station), on a result of 6 the attack strikes that other aerospace unit; on a 1–5 result, it strikes the intended target.

Multiple Docking/Grappling

A WarShip/Space Station can only be docked/grappled by four attacking units at one time, but none in the same arc; re-roll the random arc location for the defending unit if that location is already occupied by another unit. In all instances, if an attacking unit breaks the dock/grapple, a new attacking unit can attempt to dock/grapple in a subsequent turn.

Standard Docking

A friendly aerospace unit can attempt to dock (see *Docking*, p. 66) to a friendly ship that is docked/grappled to another aerospace unit as part of a boarding action, but must apply a +2 modifier in addition to all the standard modifiers. In this case, the multiple docking/grappling limits above do not apply; a friendly aerospace unit can attempt to dock as many other friendly units as it has docking collars (as noted on the record sheet or Technical Readout write-up). If such a docking is successful, during the End Phase of the following turn the controlling player can add any additional personnel he chooses to the boarding action (as always, a new Marine Points Score will need to be generated; see *Marine Points Score* p. 201, *TO*).

BOARDING FOR DAMAGE INFANTRY VS. INFANTRY ACTION TABLE

	Attacker to Defender Odds Ratio								
2D6 Roll	1 to 3<	1 to 3	1 to 2	2 to 3	1 to 1	3 to 2	2 to 1	3 to 1	>3 to 1
2	E/0% (R)	55%/0% (R)	50%0% (R)	40%/0% (R)	45%/0% (R)	40%/2% (R)	35%/3% (R)	30%/5% (R)	25%/20% (R)
3	55%/0% (R)	50%/0% (R)	45%/0% (R)	35%/0% (R)	40%/2% (R)	35%/3% (R)	30%/5%	25%/10%	20%/25%
4	50%/0% (R)	45%/0% (R)	40%/0% (R)	35%/2%	35%/3%	30%/5%	25%/10%	20%/15%	15%/30%
5	45%/0% (R)	40%/0%	35%/2%	30%/3%	30%/5%	25%/10%	20%/15%	15%/20%	10%/35%
6	40%/2%	35%/2%	30%/3%	25%/5%	25%/10%	20%/15%	15%/20%	10%/25%	10%/40%
7	35%/3%	30%/3%	25%/5%	25%/10%	20%/15%	15%/20%	10%/25%	10%/30%	5%/45%
8	35%/5%	30%/5%	25%/10%	20%/15%	15%/20%	10%/25%	10%/30%	5%/35%	5%/50%
9	30%/10%	25%/10%	20%/15%	15%/20%	10%/25%	10%/30%	5%/35%	5%/40% (1)	5%/55% (1)
10	25%/15%	20%/15%	15%/20%	10%/25%	10%/30%	5%/35% (1)	5%/40% (1)	5%/45% (1)	3%/60% (2)
11	20%/20%	15%/20%	10%/25% (1)	10%/30% (1)	5%/35% (1)	5%/40% (1)	5%/45% (2)	3%/50% (2)	2%/65% (3)
12	15%/20% (1)	10%/25% (1)	5%/30% (1)	5%/35% (2)	5%/40% (2)	5%/45% (2)	3%/50% (2)	2%/55% (3)	1%/70% (3)

Dropping Troops

If using the Dropping Troops rules (see p. 22), and ground forces are on the surface of an aerospace unit in the same location as an enemy docked/grappled aerospace unit, the troops and the enemy unit may make weapon attacks against each other (see p. 120). Enemy infantry may also swarm such an aerospace unit, using the Swarm Attacks rules (see p. 220, *TW*).

Friendly ground forces in the same location as a docked/grappled aerospace unit may mount (or dismount) using the *Carrying Units* rules (see p. 89, *TW*).

Finally, any infantry that have successfully landed on an aerospace unit may be added to the appropriate Marine Points Score in the following space turn (a new Marine Points Score and ratio will then need to be determined; see *Marine Points Score* p. 201, *TO*).

Size of Defending Aerospace Unit Modifier

Like buildings (see *Building Modifier*, p. 203, *TO*), aerospace units cover a vast range of sizes, from 100-ton Small Craft to 15,000-ton DropShips to million-ton WarShips and Space Stations. In reality, clearing out a million-ton, kilometer-and-a-half-long space station—where the defenders know every access hatch and crawl space—could take days, if not weeks. To reflect a defender's intimate knowledge of such large aerospace units while keeping these events within a time frame that allows them to play out on a game table with other aerospace actions, the following rule equates "time" to a defender's bonus for ease of play.

After determining the defender Marine Point Score—as noted above—multiply that value by the following: a .1 modifier for every 100,000 tons after the first 100,000 tons of the defending unit. Round all fractions up.

Military Vs. Civilian: Military aerospace units are designed to hamper boarding actions. As such, regardless of its size, a military aerospace unit provides a .1 defending modifier applied to the ratio, before rounding. The unit's record sheet (or Technical Readout write-up) should include an indicator of whether a unit is a civilian or military craft; if it is ambiguous, the playing group should determine the unit's status (even if through a die roll) before play begins.

Structural Integrity Damage

After every Boarding Action Roll, another 2D6 roll should be made. On a result of 12, the unit takes damage. For JumpShips and Space Stations, in place of SI damage, apply the damage as a single 10-point Damage Value grouping to a randomly determined facing, rolling 1D6 and using the Random Facing Table (see p. 98), then 2D6 to determine the specific location damaged (per the Aerospace Hit Location Table, p. 237, *TW*).

BOARDING FOR DAMAGE (OPTIONAL)

When a hostile force boards an enemy unit, it is not always with the purpose of capturing the unit (the assumption of the rules as presented in *Tactical Operations*). Many times a smaller force will board with the express purpose of disabling the enemy unit. A boarding for damage assault is focused on damaging critical components of the boarded unit, with the assault team attempting to avoid an upfront confrontation with the defending crew.

Once both sides have declared their initial Marine Point Score (see p. 201, *TO*), the attacking player must immediately declare he is boarding with intent to damage. He then triples his Marine Point Score solely for the purpose of determining which column of the Boarding For Damage Infantry Vs. Infantry Action Table (see above) to roll on. The Infantry Vs. Infantry Action Roll (see p. 204, *TO*) is conducted normally, with the standard rules for outside reinforcements, withdrawal and structural damage. Results of the die roll, however, are compared to the Boarding For Damage Infantry Vs. Infantry Action Table (see above). Damage to attacker and defender is determined the same as a standard infantry vs. infantry action. However, instead of a possible special result of (P) for Partial Control, the attacker can potentially get a special result of (1), (2) or (3), which indicates how many critical hit rolls they can make. These critical hit rolls only apply if the infantry action successfully inflicts a critical hit per the standard rules for the type of unit in question.

If the attacker is attempting to damage a specific component (Engines, CIC and so on), then he only multiplies his actual Marine Points Score by 2 instead of 3. However, if the attacker receives a chance for a critical hit roll and then rolls a

critical hit, the targeted component is damaged per normal critical hit rules.

Note: While most commonly seen in space combat, boarding for damage is applicable with all other boardable units, as described in *Infantry Vs Infantry Actions* (see p. 199, *TO*). If using these rules in a building, each successful critical hit does 10 percent of the base CF in damage to Standard buildings, 5 percent to Hardened buildings and 1 percent to Castles Brian. A single hex can be targeted for collapse if the attacker gets 2 critical hits in one turn for a Standard building, 4 critical hits in one turn for a Hardened building and 8 critical hits in one turn for a Castle Brian.

Bill sends a marine strike team to board his opponent Hank's Vengeance*-class DropShip; he wants to make sure Hank's fighters can't get away. Determining his Marine Point Scores using the Infantry vs Infantry rules in* Tactical Operations*, Bill has an MPS of 16 from his 8 marines in medium Inner Sphere battle armor and Hank has pulled all his aerospace technicians and added ten marines for a total MPS of 20.*

With the MPS revealed for both sides, Bill now declares he will be Boarding for Damage with a target of the engines of the Vengeance*. Because he is trying for a specific target he only multiplies his MPS by 2 for a total of 36 MPS. Comparing the values, Bill gets a 1.8 which means he will roll on the 3 to 2 column. Rolling a 10, Bill just ekes out a critical hit roll. A die roll of 8 gives him one critical. Because this was a targeted attack, the critical is automatically assigned to the engine. In the next turn, Bill can try for another critical or withdraw.*

If Bill had chosen to just inflict random damage, his MPS would have been multiplied by 3 for a total of 48, and he would've rolled on the 2 to 1 column instead of the 3 to 2.

MORALE AND FATIGUE (OUTSIDE OF GAME PLAY)

Physical damage—the loss of personnel and equipment—is only one way in which a force's effectiveness can be destroyed. More insidious—and more prevalent in campaigns—is the destruction of a force's will to fight, usually brought about by reversals of fortune and poor conditions. This occurs in two ways: morale and fatigue, the first principally mental and emotional and the latter physical.

The following rules show the larger scope of morale and fatigue across several scenarios, building on those concepts from *Tactical Operations* (see *Morale*, p. 211 and *Fatigue*, p. 198, *TO*), where the rules focused directly during game play of a single scenario.

Terminology: In these rules, any time the term "company" is used, it can mean a company, Trinary or Level III, or any other factional military organization of the same approximate size. The term "lance" can mean a lance, Platoon, Star, Level II, or any other factional military organization of the same approximate size.

Morale/Fatigue Cycle: These rules use terminology similar to the Maintenance/Repair Cycle (see *Time*, p. 166), as both rule sets are intrinsically linked to the overall health of a force. A Morale/Fatigue Cycle is one week. Whenever a Morale or Fatigue Check is called for, it occurs at the start of that week's Morale/Fatigue Cycle.

Force Quality

For these rules, a force's "Force Quality" must be generated, whether the unit is Green, Regular, Veteran or Elite. To determine this value, average all Piloting and Gunnery Skill Ratings in a force to create a single value, which is compared to the Force Quality Table (at right).

To take into account that each pilot has two values, once the total value is generated, divide it by 2, then divide by the number of pilots (rounding all fractions normally) to find the average value of the entire force.

FORCE QUALITY TABLE

Average Piloting/ Gunnery Skill Rating	Force Quality
7-6	Green
5-4	Regular
3-2	Veteran
1-0	Elite

GENERIC FORCE LOYALTY TABLE

Equipment Rating	Force Loyalty
A	Fanatical
B	Fanatical/Reliable
C	Reliable
D	Reliable/ Questionable
F	Questionable

Clan
Front Line = A Rating
Second Line = B Rating
Garrison/Solahma = D Rating

Kim is trying to figure her Force Quality for a company with the following Piloting and Gunnery Skill Ratings:

Pilot 1: 3/4
Pilot 2: 4/6
Pilot 3: 3/2
Pilot 4: 5/4
Pilot 5: 2/2
Pilot 6: 4/7
Pilot 7: 1/2
Pilot 8: 5/5
Pilot 9: 3/3
Pilot 10: 2/1
Pilot 11: 4/4
Pilot 12: 0/2

Kim adds all Piloting and Gunnery Skill Ratings together and comes up with 78. She divides by 2 to arrive at 39 and then divides by the number of pilots to reach a final value of 3 [78 (total value of all Piloting and Gunnery Skills) ÷ 2 = 39 ÷ 12 (number of pilots in force) = 3.25, rounding down to 3]. Comparing that value to the Force Quality Table, she's able to determine that she has a Veteran Force Quality for her force.

Force Loyalty

Unlike Force Quality (see p. 38), which has a definitive manner for determining its value, Force Loyalty is completely subjective. What makes a force fanatical, reliable or questionable toward its faction?

If players agree, they can use the Generic Force Loyalty Table (see p. 38) to determine Force Loyalty; this table is based off of the assumption that the higher the Equipment Rating of a force, the higher its loyalty to that faction (obviously this is not always the case, but it's a solid rule of thumb). For example, a militia unit is likely to have a D if not an F equipment rating and militias are not known for their fanatical loyalty. Conversely, an elite line regiment (such as the Davion Brigade of Guards, House Kurita's Sword of Light or the best of the Clan's front line, such as the Falcon Guards) is likely to have an A equipment rating, which translates into a Fanatical loyalty.

While players are encouraged to use the available published sourcebooks as a guide when determining this factor, it is ultimately up to the players and the style of forces they want to build and enjoy playing. Regardless of what form is used, all players involved in a campaign should have some input on the manner used to determine each force's Force Loyalty, as it can have a significant impact on these rules.

MORALE (OUTSIDE OF GAME PLAY)

Each force has a Morale Rating, defaulting to Normal, which modifies its abilities and determines the likelihood of a mutiny or desertions. Where a modifier is indicated on the Morale Ratings Table (based on the various circumstances in which the force finds itself), add those modifiers to the dice roll results in the appropriate circumstances: combat (Piloting, Gunnery and Initiative rolls) or non-combat (any Maintenance, Repair, Salvage or Customization rolls and so on). These modifiers do not apply to a during game play Morale Check, however (see *Morale Effects During Game Play*, p. 41).

Note that the only modifiers on the Morale Ratings Table that apply to Desertion and Mutiny Checks are: Force Quality, Force Allegiance, Force Type and Force Loyalty.

Making Desertion Checks

Players must make Desertion Checks at the start of every Morale/Fatigue Cycle (each week) and determine whether personnel abandon their posts. Roll 2D6 for each company (or portion thereof), applying the appropriate modifiers for the force as shown on the Morale Ratings Table (see p. 40). If the result is less than or equal to the force's current Morale Rating, one or more units of the company have deserted.

To determine which units are affected, roll 2D6 again for each 'Mech, aerospace fighter, ProtoMech Star, vehicle, platoon or battle armor squad/Star in the unit. Desertion Checks must also be made for every 10 non-combat personnel (or part thereof)—techs, medics and so on (see *Support Personnel*, p. 168). If this second roll result is less than or equal to the Desertion Check value, that unit deserts and is no longer available. If no unit deserts, the "desertion" is nothing more than rumor among the troops.

For DropShips, JumpShips, WarShips and Space Stations, make a Desertion Check for the entire crew. If the roll succeeds, treat the Large Craft as if it took a crew hit (either as a result of actual desertions from grounded DropShips or, in the case of units in space, crew dissatisfaction and minor acts of sabotage).

Taking Equipment: If a Desertion Check is within two points of the force's current Morale Rating (or equals the current Force's Morale Rating) the deserting personnel leave without their equipment. If the Desertion Check is greater than two points below the force's current Morale Rating, the deserting personnel take their equipment (as appropriate; a deserting Large Craft personnel would not take the Large Craft, but a deserting MechWarrior would take his 'Mech). For example, when making a Desertion Check with a force that has a current Morale Rating of 7, the controlling player would need to roll a 4 or less on the Desertion Check for the deserting personnel to take their equipment.

Making Mutiny Checks

Mutiny functions in the same way as desertion save that players make the initial check for each lance/platoon/Star rather than each company and no second roll occurs. If a lance/platoon mutinies, the entire lance is affected.

Unlike desertion, where the troops simply slip away, in a mutiny the troops actively fight non-mutineers and a battle should take place; use a breakthrough scenario (see p. 261, *TW*), with the opponent taking control of the mutineers. If the mutineers are outnumbered by 4 to 1 or worse, they will flee as if they were deserters, possibly joining the opposition. If all units in a force mutiny, the commanders have been overthrown. If a unit does not mutiny, it must still check for desertions.

A 'Mech company with a Morale Rating of 5 suffers a –1 modifier on its non-combat rolls. At the start of the force's Morale/Fatigue Cycle, the controlling player must check to see if desertions or a mutiny occur. The player rolls for once for desertion (against a target number of 3) and gets a 3, indicating that one or more lances may desert. He rolls again for each of the three lances, getting a 9, a 7 and a 10. No desertions take place.

Finally, he must then roll again for mutiny, this time against a target number of 2. He rolls a 6, 9 and 2. One lance mutinies—as it is not outnumbered 4 to 1 or worse, it will fight its former comrades!

Changing Morale

Various factors influence the morale of a Force for better or worse, some random, others fixed in their effect. The following are the principal causes of change, but none may increase the Morale Rating above 1 (Unbreakable) or decrease it below 7 (Broken).

Combat Victory: After a scenario where the Force controls the playing area, roll 1D6. If the result is lower than the current Morale Rating, Morale improves by 1 (for example, from Normal to High).

Combat Loss: After a scenario where the Force does not control the playing area (whether the opponent controls the playing area, or both sides were destroyed simultaneously), roll 1D6. If the result is higher than the current Morale Rating, Morale worsens by 1 (for example, from Normal to Low).

Campaign Victory: If the Linked Scenarios rules are in play (see p. 47), and a Force wins a campaign, it automatically gains 1 higher Morale Rating.

MORALE RATINGS TABLE

Morale Rating	Combat Modifiers	Non-Combat Modifiers	Desertion Check Target Number	Mutiny Check Target Number
1 (Unbreakable)	+1	+2	0	0
2 (Very High)	+1	+1	0	0
3 (High)	+0	+1	0	0
4 (Normal)	+0	+0	2	0
5 (Low)	+0	–1	5	4
6 (Very Low)	–1	–1	5	4
7 (Broken)	–2	–2	8	7

Situational Modifiers	Modifiers
*Force Quality**	
Green	–1
Regular	+0
Veteran	+1
Elite	+2
Force Allegiance	
Clan	+1
House/Periphery	+0
Mercenary	–1
Force Type	
'Mech	+1
ProtoMech	+1
Vehicle	+0
Infantry	–1
Battle Armor	+0
Fighter	+1
Medical Personnel (see p. 169)	+1

Situational Modifiers	Modifiers
Technical Personnel (see p. 168)	–1
Other Non-Combat Staff†	–2
Small Craft	–1
DropShip (Military)	+0
DropShip (Civilian)	–1
JumpShip (Military	–1
JumpShip (Civilian)	–2
WarShip	+2
Space Station	–2
Force Loyalty‡	
Fanatical	+1
Reliable	+0
Questionable	–1
Other	
Force has Military Police	+1
Force has suffered desertion§	–1
Force has suffered mutineers§	–3

*See *Force Quality*, p. 38. †Including crew of Support Vehicles ‡ See *Force Loyalty*, p. 39.

§The time frame for these two modifiers is based on the Force Quality, with the following values representing a number of Morale/Fatigue Cycles: Elite = 1; Veterans = 2; Regular = 3; Green = 4. For example, for an Elite force, these modifiers are only applied if the force suffered a desertion/mutineer in the previous Morale/Fatigue Cycles; if it suffered a desertion/mutineer two Morale/Fatigue Cycles in the past, the modifiers do not apply. A Green force, however, must have four Morale/Fatigue Cycles pass without a desertion/mutineer for these modifiers to no longer apply for a new Morale/Fatigue Cycle.

Loss of Leader: If the Commander rules are in use (see p. 191, *TO*), and if the overall Force commander is killed, the Force automatically loses 1 Morale Rating. If a sub-commander is killed, roll 1D6; if the result is higher than the current Morale Rating, Morale worsens by 1 (for example, from Normal to Low).

Combat Losses: If a deployed Force loses 25 percent of its starting strength in a single scenario, it loses 1 Morale Rating. If it loses 50 percent, Morale Ratings drop by 2, and if casualties are 75 percent or higher the loss is 3 Morale Ratings.

Supplies: If an Availability Check(s) fails to obtain a single replacement part during a Maintenance/Repair Cycle (see *Obtaining Replacement Parts*, p. 178), after all attempts to obtain replacement parts roll 1D6. On a result of 6, the Force loses 1 Morale Rating. For each 5 items that a Force fails to obtain during a single Maintenance/Repair Cycle, apply a cumulative +1 to the die roll result. Regardless of the supply situation, only a single die roll is made for each Maintenance/Repair Cycle to determine if the Force's Morale Rating changes.

Desertions: If desertions occur in a Force (see *Making Desertion Checks*, p. 39), immediately roll 1D6. On a result of 6, the force loses 1 Morale Rating.

Mutiny: If a mutiny occurs in a Force (see *Making Mutiny Checks*, p. 39), immediately roll 1D6. If the result is higher than the current Morale Rating, morale worsens by 1.

Inactivity: If four Morale/Fatigue Cycles pass without combat (i.e. the Force is not deployed in a scenario), move its Morale Rating 1 closer to Normal (that is, down if it is currently 1-3 or up if it is 5-7).

Fatigue: If a Force has Fatigue Points of 5 or higher, it may lose a Morale Rating (see *Fatigue (Outside of Game Play)*, p. 41).

Morale Effects During Game Play

The Morale Rating of a force directly impacts its morale during game play. If both these morale rules and the morale rules during game play (see p. 211, *TO*) are in use, the follow rules are in effect.

For each Morale Rating lower than Normal, apply a –1 modifier to any Morale Check during game play. For each Morale Rating higher than Normal, apply a +1 modifier to any Morale Check. For example a force with a Very High Morale Rating would apply a +2 modifier to a during game play Morale Check, while a force with a Broken Morale Rating would apply a –3 to a during game play Morale Check.

FATIGUE (OUTSIDE OF GAME PLAY)

The more a force fights without taking a break, the less effective it is in combat. To reflect this, each company has Fatigue Points that increase and decrease as it acts and rests. The higher the Fatigue Points, the less effective the force becomes and the more chance its morale may suffer.

Every time any part of a company is involved in combat (meaning it is deployed in a scenario), increase that company's Fatigue Points by 1. If a company does not fight in a Morale/Fatigue Cycle (i.e. it is not deployed in a scenario), decrease its Fatigue Points by 1. For every two Morale/Fatigue Cycles that a force is not in combat (deployed in a scenario) beyond the first Morale/Fatigue Cycle, decrease its Fatigue Points by 1.

Field Kitchen: Forces that have access to field kitchen reduce fatigue by 1 extra point. One field kitchen can supply 150 combat troops (and their support personnel) per Morale/Fatigue Cycle. When determining which forces have access to the available field kitchen resources, do not split any units; that is, all 28 ground-pounders in that platoon are counted or none are.

Fatigue Effects

When a company takes an action, cross-reference its current fatigue with the columns on the Fatigue Ratings Table (at right). Where a modifier is indicated, add it to the dice roll results in the appropriate circumstances: combat (Piloting, Gunnery and Initiative rolls) or non-combat (any Maintenance, Repair, Salvage or Customization rolls and so on).

If at the start of a Morale/Fatigue Cycle a Morale Check is indicated for the company's current Fatigue Points, roll 2D6 and add the appropriate fatigue modifiers. If the result is lower than the current Fatigue Points, the force loses a Morale Rating. If a force contains more than two companies, make Morale Checks for each, with the force losing a Morale Rating if more than half the companies in it have results lower than the current Fatigue Points.

Fatigue Effects During Game Play

The Fatigue Points of a force directly impacts its fatigue during game play. If both these fatigue rules and the fatigue rules during game play (see p. 198, *TO*) are in use, the follow rules are in effect.

Each –1 combat modifier, as shown on the Fatigue Ratings Table, subtracts one turn from the Fatigue Table (see p. 198, *TO*) to determine when Piloting and Gunnery Skill modifiers are applied. For example, a 'Mech with a Gunnery Skill of 3 and 13 Fatigue Points at the start of a scenario would apply a +1 Piloting Skill Roll modifier at the start of Turn 14, and would apply a +1 to-hit modifier at the start of Turn 17.

FATIGUE RATINGS TABLE

Fatigue Points	Combat Modifiers	Non-Combat Modifiers	Morale Check
0	+0	+1	None
1-4	+0	+0	None
5-8	–1	+0	Yes
9-12	–2	–1	Yes
13-16	–3	–2	Yes
17+	–4	–3	Yes

Situational Modifiers	Modifiers
*Force Quality**	
Green	–0
Regular	+0
Veteran	+1
Elite	+2
Misc.	
Force is Clan	+2

* See *Force Quality*, p. 38

MOVING CARGO

Military and civilian units transfer cargo in a wide range of conditions. The amount of cargo that can be moved in any given period depends on the conditions and the method of moving. These rules can be used to cover almost any instance of moving cargo between two objects, whether those objects be buildings, ground vehicles, aerospace units, or even between aerospace units in zero-G conditions.

Industrial exoskeletons (IEs) are the most common means of moving cargo, but many crews must move cargo by hand. Some military units use BattleMechs to move cargo. Treat battle armor suits as industrial exoskeletons. Most starports are equipped with cargo platforms incorporating cranes and conveyor belts that significantly speed up loading and unloading.

Maneuvering cargo in zero-G is difficult unless the cargo has maneuvering devices attached. These include null-G packs, which are briefcase-sized thrusters operated much like a space version of a forklift.

Determining Tons Moved Per Minute

To determine the amount of cargo moved per minute, look on the Cargo Transport Table and begin with the method. Then apply any Lifter Type modifiers, then Cargo Type modifiers and finally Planetary Conditions modifiers. If multiple Planetary Conditions modifiers apply, the most severe condition should be applied first, moving to the least severe (this may

require some adjudication; if the players cannot agree, randomly determine in which order to apply the modifiers).

Preflight Checklist: If using the Systems Status rules, all cargo must be loaded before a preflight checklist can occur (see *Systems Status*, p. 71).

AEROSPACE UNITS

Aerospace units that are airborne and wish to transfer cargo must first dock (see *Docking*, p. 66).

Large Craft that mount liquid cargo transport bays (see p. 239, *TM*), are assumed to also mount refueling drogue/fluid suction systems (see p. 247, *TM*) for each full 10,000 tons of liquid cargo (to a minimum of 1), at no additional cost in tonnage or space; the exact location of the item is left up to the player.

When determining the time involved for transferring liquid cargo, each drogue is considered a Heavy Cargo Platform under standard gravity,

> *Ben is running a campaign set during the Reunification War. His troops are from the Federated Suns, deployed to bring the Outworlds Alliance Periphery realm into the newly formed Star League…at any cost. He and his gaming group decide it would make sense that a* Robinson (Transport)*-class WarShip might have been converted to haul liquid fuel. They decide it's a hasty refit for the invasion and not a complete ground-up redesign, and so they leave the fighter, Small Craft and BattleMech transport bays of the Block I* Robinson *alone. Instead, they translate the 56,000 tons of standard cargo space (leaving 609.5 tons for food and other crew supplies) into an insulated liquid cargo transport bay. Looking on page 239 of* TechManual*, they multiply that tonnage by .87, giving them a final tonnage of 48,720 for the liquid cargo of their choice (in this case, liquid hydrogen to fuel all the aerospace units involved in the invasion).*
>
> *As a Large Craft, the WarShip is assumed to mount one refueling drogue/fluid suction system for each full 10,000 tons. At just shy of 50,000 tons, the* Robinson *refit only mounts four such systems; Ben marks on the record sheet that each of the Fore-Right, Fore-Left, Aft-Right and Aft-Left locations mounts the drogues.*
>
> *Checking the tables, Ben realizes his refit can transfer 20 tons of liquid cargo per drogue per minute [2 tons per minute (Heavy Cargo Platform) x 10 (liquid cargo) = 20 tons], for a total of 80 tons of liquid cargo per minute if he's docked with four different ships. The fact that it will take more than 10 hours to empty the cargo bay makes him realize just how massive the bay really is!*

MOUNTING AND DISMOUNTING UNITS (OUTSIDE OF GAME PLAY)

The Carrying Units rules (see p. 89, *TW*) provide "in combat" or "during game play" rules for mounting and dismounting troops. Those rules cover the possibilities of damage to the units mounting as well as the unit being mounted, through the speed of such actions in a hot zone. Outside of combat, loading and unloading a unit requires a bit more time to ensure no problems arise.

These rules are only to be used when a unit is mounting or dismounting from a carrying unit that includes a transport bay (see *Transport Bays*, 239, *TM*) of the appropriate type for the unit in question.

Use all the standard rules for mounting and dismounting as

CARGO TRANSPORT TABLE

Results in Tons/Minute[1]

Method[2]	Base Modifier
Human	0.2
Animal (Creature Size)[3]	
Large	1
Very Large	1.5
Exoskeleton (including Battle Armor)	1
ProtoMech	Mass/15
Vehicle	Mass/60
'Mech[4]	Mass/30

Lifter Type	Modifiers
Cargo Manipulator[5]	1.2
Lift Hoist	1.2
Zero-G Gear[6]	1.75
Light Cargo Platform	2
Heavy Cargo Platform	4

Cargo Type	Modifiers
Containerized[7]	5
Liquid	5
Null-G Pack	2.5

Planetary Conditions[8]	Modifiers
Zero-G[9]	0.2
Vacuum[10]	0.75
Tainted Atmosphere	0.8
Trace or Very High Pressure Atmosphere	0.9
Extreme Temperatures[11]	0.8
Heavy Snowfall/Ice Storm/ Lightning Storm/Strong Gale/ Torrential Downpour	0.75
Blizzard/Storm/Tornado	0.5
Moonless Night/Solar Flare[12]	0.75
Pitch Black[12]	0.5

[1]This assumes the cargo is in loose, palletized format that must be "broken" from the holds ("break bulk cargo").
[2]If loading or unloading to a unit, the number of methods (whether all the same or different) cannot be greater than the number of doors the unit mounts.
[3]See *Beast-Mounted Infantry*, p. 295, *TO*.
[4]'Mech must have two working hand actuators; if a 'Mech only has one working hand actuator, modifier is mass/50. A 'Mech cannot move cargo if it does not have any working hand actuators.
[5]Cargo lifter manipulators (see p. 229, *TW*).
[6]Only in zero-G and vacuum.
[7]Cargo is in standard cargo containers (see p. 239, *TM*).
[8]If outside of a sealed structure/building/unit.
[9]Assumes a standard Terran gravity. If using different gravities (see *High/Low Gravity*, p. 55, *TO*), above 0.2G, divide the cargo moved by the square root of the gravity in G's.
[10]Must have a sealed suit/vehicle/'Mech/and so on (see *Vacuum*, p. 54, *TO*).
[11]If higher than 50 degrees C, or less than –30 degrees C.
[12]If no lights/cover available.

described under *Carrying Units* (see p. 89, *TW*), with the following exceptions:

- Multiply the time required to mount or dismount a unit by 6. For example, during game play, to mount or dismount a 'Mech requires 1 turn, or 10 seconds. Outside of game play, it requires 60 seconds. A fighter requires 4 turns to mount a grounded DropShip, or 40 seconds. Outside of game play, it requires 4 minutes.
- A conventional infantry platoon or battle armor squad is equal to a 'Mech when determining the number that can mount or dismount in a turn.
- As long as a door is used to mount or dismount a unit, that door cannot be used to transfer cargo.
- If the following Planetary Conditions exist while loading or unloading a unit, multiply the time required by 8 instead of 6. For conventional infantry only, Tainted Atmosphere, Trace or Very High Pressure Atmosphere; for all units, Heavy Snowfall, Ice Storm, Lightning Storm, Strong Gale or Torrential Downpour. If the following Planetary Conditions exist while loading or unloading a unit, multiply the time required by 10 instead of 6; for all units, Blizzard, Storm, Tornado, Moonless Night, Solar Flare or Pitch Black.

Kristian is loading up his empty Colossus*-class DropShip in preparation for liftoff and wants to know how long it will take.*

The Colossus *has transport bays for 72 heavy vehicles, 36 'Mechs and 12 foot platoons. That equals a total of 120 units, all of which take 1 minute to mount the DropShip and secure. However, a torrential downpour is underway, so instead of 60 seconds, mounting takes 80 seconds per unit, or a total of 160 minutes.*

The Colossus *has 10 doors available for mounting such units, and so Kristian can load any combination of vehicles/'Mechs/infantry, ten at a time, every 80 seconds. He quickly figures that he can load (or unload, when it comes time for it), all 120 units in 16 minutes.*

He then realizes he should load up the 1,056 tons of cargo he's got. After all, if his troops are going to have ammunition and supplies to fight with, he'd better get that cargo on board. He knows he can't be loading cargo through any of the doors while he's loading units, so he notes that first. Next, he figures out how quickly he can load all the cargo.

He's in the field and so doesn't have access to a cargo platform. However, he's got four Buster Class XXI *HaulerMechs, and ten P-5000 PowerLoader exoskeletons. Because he's only got 10 doors to load through, he can only use six of the PowerLoaders for now.*

Since all of the IndustrialMechs are the same tonnage, he can figure out the first one and simply multiply by four. The Buster Class XXI *HaulerMech weighs 50 tons. Looking at the base modifier for Method, he divides the weight of 50 by 30 to arrive at 1.66 (he's not anal enough to go beyond two decimal places). The HaulerMech mounts lift hoists, so he applies the 1.2 modifier, giving him 1.99 [1.66 (base modifier for Method) x 1.2 (lifter hoists modifier) = 1.99 tons per minute]. Kristian made sure that all of his supplies were delivered in universal cargo containers, so he can multiply that time by 5, giving him 9.95 tons of cargo per minute per door [1.99 (current modifier) x 5 (containerized modifier) = 9.95 tons per minute]. But, he's got that pesky torrential downpour to deal with. Checking the table, it throws a .75 modifier into the works and so gives him a final 7.46 tons of cargo per minute [9.95 (current modifier) x .75 (torrential downpour modifier) = 7.46 tons per minute], per door for the four IndustrialMechs.*

Now he figures out how much his exoskeletons can move. Once again he starts at the base modifier, which is 1 ton per minute. The exoskeletons do not mount cargo manipulators and so do not have a lifter bonus. He then multiplies by 5 for the universal cargo containers, but then has to toss in the .75 modifier for that torrential downpour, giving him a final 3.75 tons of cargo per exoskeleton, per minute, per door.

He then does some quick math to figure out how much cargo is being moved per minute and arrives at 52.34 [7.46 (each IndustrialMech) x 4 (number of IndustrialMechs) = 29.84 + {3.75 (each exoskeleton) x 6 (number of exoskeletons) = 22.5} = 52.34 tons]. With that figure, he quickly determines he's got 20.17 minutes' worth of heavy hauling until the 1,056 tons of cargo are stowed.

From the time Kristian starts until his ship is ready to lift off, 36.17 minutes elapse. This DropShip was made for fast deployment!

UNITS AND PERSONNEL IN CARGO BAYS

Vehicles, BattleMechs, other combat units and personnel are generally transported in specialized transport bays, as described above. Periodically, it is necessary to transport vehicles or even personnel in cargo bays. (In the latter case, the most common option is to convert cargo bays into steerage quarters to give the infantry more suitable long-term quarters than the misery of infantry bays.) The problem with this form of transport is that cargo bays are not designed for rapid deployment of combat units (no roll-on, roll-off features typical of vehicle bays or orbital drop equipment typical of 'Mech bays) and lack life support for personnel transported in this fashion.

When transported via cargo bay, combat units may only be unloaded on the ground, to another docked aerospace unit, or into an appropriate vehicle/'Mech/fighter/etc. bay using the above rules for cargo transport. Infantry units are treated as cargo of mass equal to an appropriate infantry compartment (see p. 239, *TM*) because, while the soldiers can walk off a ship quickly, unloading their gear from a cargo bay is a more tedious process than unloading from a real infantry bay or compartment. 'Mechs being unloaded do not get to count their own hand actuators toward the process of moving cargo. And this form of cargo is definitely not considered "containerized."

Only so many personnel can be involved in unloading a unit at a time. For non-infantry units, this number of unloading personnel is generally 5, and should be drawn from the carrier vehicle's crew (the crew of the unit being unloaded is generally little more than a hazard in cargo operations; a tank's crew is rarely trained in the use of IEs or null-G packs). Infantry units count each soldier in the unit as a "person" (without null-G or IE aid) when unloaded.

As a bonus, the unitary nature of non-infantry units (they are a single package to unload) and their self-propulsion allows them to be unloaded faster than an equivalent payload

of bulk cargo. Double the cargo handled per turn for vehicles, fighters and so on being unloaded or loaded into cargo bays. (Note that much of the actual time loading these units is spent securing or unsecuring them, not taking them in and out of the transport.) 'Mechs, unfortunately, do not get this bonus—cargo bay doors are rarely designed to pass structures as tall as 'Mechs, and so by default 'Mechs are generally strapped down to transport pallets when loading.

When transported in aerospace units or submarines, infantry and combat unit crews must be supplied with separate quarters (long term) or infantry bays (for short missions). If not, use of various "consumables" (primarily air and water) is extremely high from the vessel's life support systems, which must draw upon emergency reserves and operate in an "open" cycle because the recycling systems are not meant to handle personnel camping in the cargo bay. This consumption is 1 ton of food, air, water and so on per day per 5 people, rounded up to the nearest ton. Infantry bays (and the quarters included in other combat unit bays) are hardly a better choice, requiring 1 ton of consumables per day per 20 people; quarters are the preferred means of transporting personnel by submarine or spacecraft. (Quarters are so preferred that large infantry units usually convert cargo space to quarters and only load into the infantry bays of DropShips immediately prior to combat.)

An interesting hybrid of unloading personnel and units from cargo bays is to first move them into an empty bay of the appropriate type. This would allow (for example) a DropShip with a large cargo capacity and a few BattleMech bays to slowly and tediously make orbital drops of a large number of BattleMechs. The most notable usage of this system is the Cloud Nine Carrier Airship (see p. 100, *Technical Readout: Vehicle Annex*), which has the cargo capacity for approximately six medium aerospace fighters but only a single aerospace fighter bay. (Such airship launches would obey the normal launch and recovery rules for fighters docking with DropShips in flight, with their attendant high target numbers; see *Launching/Recovering Fighters/Small Craft*, p. 85, *TW*.)

Readying for Deployment

Unlike transporting units in their appropriate transport bays, transporting a unit as cargo means the unit is not instantly ready to deploy as soon as it unloads (for the exception, see *Conventional Infantry* at right).

Once a unit has been unloaded, provided a full technical team of one tech and six astechs are working on it (see *Technical Personnel*, p. 168), it requires 15 minutes (90 turns) to prepare the unit for use. For each astech less than the full technical team, apply 1D6 additional minutes. If the lead tech is absent, apply 2D6 additional minutes. At least one tech/astech must be present to ready a unit; pilots (whether MechWarriors, aerospace pilots, infantry and so on) cannot ready units for deployment that have been transported via the cargo rules noted above.

At the end of that time, provided an appropriate pilot is available, the controlling player can move and fire the unit appropriately (if during a scenario, starting at the beginning of the turn following the expiration of the time limit).

Additional Techs: For each additional astech, subtract 1 minute; for each additional tech subtract two minutes. Only two total technical teams can work to ready a single unit at a time; in which case the time requirement would be 7 minutes (42 turns).

Personal Unit: If the technical team is permanently assigned to the unit they are working on, reduce all times above by 5 minutes (30 turns); if randomly determining time, total all times and then subtract the 5 minutes.

Conventional Infantry: Foot infantry (regardless of type) are ready to deploy as soon as they finish unloading.

> *Donald Hoeck wants to demonstrate a new concept for an aircraft carrier: an airship. While historically sound and proven (more than 1,100 years earlier with low stall speed biplanes), the* Corsairs *that Hoeck selected for his demonstration proved distinctly unsuitable. The dramatic docking failure is a problem for other rules; the concept that made the Cloud Nine Carrier feasible was its use of cargo bays to dramatically lighten the mass of transported fighters. Instead of assigning 900 tons of six fighter bays to the squadron, Hoeck could use the Cloud Nine's cargo bay to store up to 400 tons of fighters—a squadron of 50-ton* Corsairs *and 100 tons of supplies (150 tons if one fighter was kept in the fighter bay).*
>
> *Unfortunately, the 5 crew of the Cloud Nine assigned to moving the fighters between bays, even when given industrial exoskeletons with cargo manipulators, can only move 12 tons per minute. It thus takes 4 minutes and 10 seconds (25 turns) to load a* Corsair *into the fighter bay, or to move a recently docked* Corsair *from the fighter bay back into cargo space and secure it.*

ORBITAL OBSTACLES

While space is vast, orbital battlefields—like their ground equivalents—often take place in areas of difficult terrain, either for tactical reasons or because of the amount of wreckage strewn across the battlefield.

ASTEROIDS

Some battles take place in or near asteroid fields. The following rules allow for a dramatic version to be included in games (though in reality, asteroids are so widely spaced they'd scarcely pose a navigational threat, let alone provide a tactical battlefield). These rocks, massing from a few grams to hundreds or even thousands of tons, can be a boon or a curse in space combat. Most DropShips and JumpShips carry a series of small guns (usually lasers or PPCs) used to destroy small pieces of debris a few centimeters across, and of course WarShip armaments cover this concept. However, all units, even the most heavily armored WarShips, must steer around large obstacles or else risk damage.

To add an asteroid field to the game, place asteroid counters on the map before play begins (players can use any type of token to represent asteroids). Players should agree on a system for placing the asteroid counters and determine the number of counters to be placed, if that number is not specified in the scenario set-up rules. For purposes of determining the amount of damage an asteroid can withstand (see below), each asteroid should be designated as small, medium or large.

Asteroids may be stationary or mobile. Mobile asteroids may all move in the same direction at the same velocity, or each asteroid can move at a unique heading and velocity. To give each asteroid a unique movement, roll 1D6 for velocity and 1D6 for direction using the Dive-Bombing Scatter Diagram (see p. 245, *TW*). If an asteroid moves off the edge of the playing area or enters a space/atmosphere interface hex, remove it from play. If the players want to keep the playing area crowded with asteroids, each one that

moves off the map can be replaced by a new asteroid (with the same heading and velocity as the exiting one) that enters the map from the opposite edge at the start of the following turn. If using Advanced Initiative (see p. 63), make a single Initiative roll for the entire field, applying a –6 penalty. If using regular Initiative, move mobile asteroids at the start of the Movement Phase (Aerospace) before any other units.

A unit may enter or end its movement in a hex occupied by an asteroid, but risks colliding with the asteroid. When a unit enters an asteroid hex or an asteroid enters the same hex as a unit, make a Control Roll with a +1 modifier for fighters and Small Craft and a +2 modifier for Large Craft (and any modifiers for critical damage or thrust). A successful roll means the unit and asteroid miss each other.

On a failed roll, the unit and the asteroid collide. The unit sustains a number of points of capital-scale damage equal to 1D6 x MoF. Regardless of whether the unit moved into the asteroid hex or the asteroid moved into the unit's hex, apply the damage to the facing of the unit corresponding to the hexside through which the unit or asteroid entered the target hex.

Asteroids suffer 1 point of damage for every 10,000 tons of the colliding unit's mass (round down). For example, if an *Aegis*-class cruiser collides with an asteroid, the asteroid sustains 74 points of damage (745,000 tons ÷ 10,000, rounded down). Capital-scale weapon fire can also damage or destroy an asteroid. Standard-scale weapons can damage asteroids if fired en masse (in bays), but individual standard-scale weapons are ineffective at damaging asteroids and only cause 1 point of damage on a 2D6 roll that is less than the weapon's Damage Value (5 for a medium laser, 10 for a PPC, 15 for a Gauss rifle and so on).

Each general size category of asteroid can sustain different amounts of damage before being destroyed. The players should agree on the number of capital-scale points each size asteroid can withstand in the current game, but we suggest that small asteroids may sustain no more than 200 points of damage; medium-sized asteroids, 600 points of damage; and large asteroids, 1,200 points of damage before being destroyed.

If two or more asteroids end their movement in the same hex, they may collide (roll 1D6; on a result of 6, a collision occurs). Where an asteroid collision occurs, if one is smaller than the other (or has more damage points), the smaller asteroid is destroyed. If the asteroids are the same size, determine the survivor randomly. Surviving asteroids take no damage and continue moving in the same direction and heading as before the impact.

A hex occupied by an asteroid blocks line of sight.

DEBRIS

With the following exception, combat debris—the shells of destroyed Large Craft—uses the asteroid rules. Treat debris from DropShips as a small asteroid, and debris from JumpShips, WarShips and Space Stations as a medium asteroid. Fighters, Small Craft and Satellites never leave debris when they are destroyed.

When a DropShip, JumpShip or WarShip is destroyed, replace the unit with a debris counter. The debris has the same velocity and heading as the destroyed unit did before its demise. For attacks that trace line of sight through a hex containing a debris counter, modify the to-hit number by +1 for a small debris counter and +2 for a large debris counter. Apply these modifiers for each debris counter through which line of sight passes. These modifiers are cumulative (the more debris in a hex, the higher the modifier).

SEARCH AND RESCUE

In standard-rules play, wounded personnel, ejected MechWarriors and pilots, or crews who survive the destruction of their vehicle, DropShip, JumpShip or WarShip are considered to be automatically recovered by their comrades after a battle. However, the recovery of wounded personnel can be difficult and complicated. To add a note of realism, players may incorporate search and rescue into their after-battle activities to recover any personnel left on the battlefield at the end of play.

Any units not involved directly in a scenario that just ended, or involved in salvage or repair and refit operations (see pp. 191 and 181, respectively), can be assigned to search and rescue operations on one playing area battlefield (either ground-based or space based). These units will not be available for deployment in the next scenario where the force is deployed.

For each ejected MechWarrior or pilot, vehicle crew, escape pod or lifeboat, roll 2D6 and apply the modifiers from the Search and Rescue Modifier Table (see p. 46). On a result of 8+, the controlling player has recovered the personnel in question.

Wounded Checks: Paramedics (see p. 341, *TO*) aboard the units attempting recovery operations apply the appropriate target number modifier when checking the wounded status of infantry (see *Mostly Dead vs. Truly Dead*, p. 176).

Randall's company of Draconis Combine BattleMechs is driven from the field by the Elite McKinnon's Raiders. Two Combine MechWarriors have been left behind, and Randall sends out a search and rescue mission. The base target number is 8. The enemy is in control of the battlefield at the end of the game (+2), but the SAR force included a Hiryo Armored Infantry Transport WiGE (–1). The final modified target number is 9 [8 (base target number) + 2 (enemy in control of battlefield) – 1 (Hiryo) = 9].

Rolling for each MechWarrior, Randall gets 8 and 9, indicating that the SAR mission succeeded in recovering the second of the two MechWarriors.

Three of Warner's Clan Nova Cat aerospace fighters are destroyed in a deep space battle with the Ghost Bears. All three pilots eject from their destroyed aerospace units and a Nova Cat Carrier-*class DropShip participates in SAR operations. The base target number is 8 and the operation is taking place outside a planetary orbit (+2), but the searcher has a DropShip (–2). The final modified target number is 8 [8 (base target number) + 2 (outside planetary orbit) – 2 (DropShip) = 8].*

Rolling for each of the pilots, Warner gets 9, 5 and 5, which indicates that he recovers one of his pilots.

SEARCH AND RESCUE MODIFIERS TABLE

Situation	Modifier
General	
Enemy in control of the battlefield	+2
Ground	
SAR force includes VTOL or WiGE	–1
SAR force has Improved Sensors	–1
SAR force has Active Probe	–2
Space	
Not in planetary orbit	+2
SAR force includes Small Craft*	–1
SAR force includes DropShip*	–2
SAR force includes WarShip*	–3

* Use largest modifier only

PRISONERS OF WAR (OPTIONAL)

Any surviving personnel not recovered during search-and-rescue operations become prisoners of the victor (the player who controls the battlefield at the end of a scenario). Recovering these POWs can become the primary objective in a future scenario.

If players choose this route, the controlling player of those POWs must make Wounded Checks (see p. 176) to determine how many such captured individuals survive. Additionally, for every 100 prisoners, a squad of infantry or battle armor must be tasked to control them in jail; such tasked infantry are unavailable for any future scenario while those prisoners are kept, except if the scenario itself is about freeing the captured prisoners.

Going to Ground: This rule assumes that all enemy personnel are automatically captured at the end of a scenario. However, enemies "going to ground" to avoid capture is a time-honored tradition dating back thousands of years. If players want to add a bit more realism concerning how long it takes to capture enemy personnel, use the following rules. (Note these rules do not cover all possibilities, but instead provide a quick and simple system for incorporating this aesthetic into game play; for more detailed scenarios of personnel attempting to avoid capture, players are encouraged to roleplay the situation. Additionally, these rules do not cover personnel permanently avoiding capture and joining a local resistance force.

At the end of a scenario, use the rules exactly as described for Search and Rescue operations, but apply a –4 to the die roll result for each unit crew (MechWarrior, pilot, vehicle crew and so on) that has gone to ground; this represents the victorious enemy sweeping the battlefield for any survivors and opposing personnel attempting to hide from such searches.

For each day that a dedicated Search and Rescue operation is made for each such "going to ground" enemy personnel, the controlling player adds a +1 modifier to that –4 modifier. For example, after three days the modifier would only be a –1, and after six days the modifier would be a +2.

Note all of these modifiers are in addition to the standard modifiers from the Search and Rescue Modifiers Table.

If a MechWarrior, pilot, crew and so on, took any damage during the scenario, the controlling player of those personnel must make a Wounded Check (see p. 176) with a Base Target Number of 8, per day that they're "going to ground," applying a cumulative +1 modifier for piloting hit. Additionally, for each Planetary Condition from the Maintenance, Repair and Salvage Check Modifiers Table that applies (see p. 171), apply a cumulative +1 modifier. Each failure inflicts an additional point of damage.

Clansmen: Prisoners originating from the Clans may be incorporated into the capturing player's force, though they may require medical attention before being ready for duty. Use the Clan Honor Interpretation Table on page 274 of *Total Warfare* to determine whether Clan prisoners can be incorporated into a player's force. Any Clan that uses strict interpretation can be incorporated automatically. For opportunistic Clans, roll 1D6. On a result of 5 or 6, the Clan prisoners can be incorporated; on a result of 1 to 4, they remain prisoners. Soldiers whose Clan uses a liberal interpretation of Clan honor cannot be incorporated and are always treated as prisoners.

Once it is determined if a Clansman (MechWarrior, pilot, crewman and so on) can be incorporated into the player's force, roll 1D6. The result is the number of scenarios that must pass before the Clansman in question can be fielded; this represents the period of time the Clansman takes to prove his worth and move beyond being a bondsman to being *abtakha* (adopted as a warrior into the new force).

At the end of a lost scenario the controlling player of an ejected sub-commander MechWarrior decides he's going to have the warrior "go to ground." He's got forces within a three day march of this location and so knows he'll be able to set up a scenario to try and recapture the battlefield, and hence his pilot, in three days.

The opposing players really wants to grab the sub-commander, as it'll give him good leverage against his opponent. As such, he dedicates three different Search and Rescue units to just tracking down the single MechWarrior. On the first day (the day the scenario occurred), a –4 modifier is applied to all three Search and Rescue rolls. On the second day, a –3 modifier is applied, while on the third day a –2 modifier is applied; there would be no roll on the fourth day, as that's the day a new scenario is played in the same area.

The controlling player of the MechWarrior is taking a chance, however, as there's both heavy snow falling and an extreme temperature of –30 degrees C in effect, and the pilot has taken two hits. That means the controlling player must make a Wound Check at a Base Target Number of 8, applying a +4

AEROSPACE SAR PILOT AND RESCUE TABLE

Situation	Modifier
Rescuing aerospace unit expends thrust	+ Thrust Points spent
Rescuing aerospace unit is the target of attacks	+1
Ejected pilot has maneuvering pack	–1
Rescuing aerospace unit is Small Craft	–1
Rescuing aerospace unit is DropShip	+1
Rescuing aerospace unit is WarShip	+2

modifier [+2 (2 pilot hits) +1 (heavy snow fall) +1 (extreme temperature) = +4] for a final Modified Target Number of 12. In addition to avoiding capture for three days, the controlling player has to roll a 12 for each of those three days or the pilot will take a hit for each failed roll. Perhaps he should've let the opponent capture his sub-commander and then paid the price for a prisoner exchange.

AEROSPACE SAR (OPTIONAL)

The following rules provide a more complicated and realistic manner for SAR on a space map.

The SAR unit must end the turn in the same hex as the ejected pilot with the same heading and velocity (in standard movement) or with the same vectors (in Advanced Movement; see p. 64). In the End Phase of the following turn, the controlling player of the SAR unit should make a Control Roll, applying the modifiers from the Pilot Rescue Table above. If successful, the pilot is recovered. If the roll fails, another attempt may be made in the next and subsequent turns until the rescue is successful or the attempt is abandoned.

MOVEMENT AND WEAPON RESOLUTION DICE

As with the Movement and Weapon Resolution Dice Tips and Suggestions from *Tactical Operations* (see pp. 27 and 109, respectively), dice can help speed up and simplify game play for aerospace movement and combat. While the suggestions for using Weapon Resolution Dice from *Tactical Operations* applies to aerospace combat as written for ground combat, the differences in movement for aerospace units means a slightly different set of suggestions when using movement dice with aerospace movement.

Once a player has finished moving an aerospace unit, place a movement die along the appropriate hexside to indicate its heading; if using Advanced Aerospace Movement (see p. 64), place the die along the appropriate hexside to indicate the vector with the highest velocity.

Additionally, players can use the numerical value on their dice to indicate what type of movement was used: Safe Thrust = 1, Maximum Thrust = 2, Evading using Safe Thrust = 3, Evading using Maximum Thrust = 4, ECHO using Safe Thrust = 5 and ECHO using Maximum thrust = 6 (see Emergency Combat Heading Operation (DropShips and WarShips Only), p. 113).

Finally, players should use two different colored dice and rotate those colors every turn. For example Turn 1 would be blue dice, Turn 2 red dice, Turn 3 blue dice once again, and so on. Unlike ground movement, where all dice are removed from the playing area during the End Phase, aerospace units retain their velocity from turn to turn and so the dice remain on the table heading into the following turn. Using different colors in alternating turns will make it easier for players to see which units have or have not yet moved at any given moment during the Movement Phase (Aerospace).

LINKED SCENARIOS

The *Creating Scenarios* section of *Total Warfare* (starting on p. 256, *TW*) provides several scenarios that players may use as the basis of their games. This section expands on those rules, going beyond individual scenarios to provide a mechanism by which scenarios can be linked into a campaign, the results of one feeding into the situation of the next and shaping the events that occur. The system also gives the players the opportunity to achieve strategic goals that affect the campaign in addition to simply beating on their opponent's Forces.

Terminology: Linked scenarios use the same definitions as *BattleForce* (see p. 212), with a Unit representing multiple Elements and an Element indicating a 'Mech, vehicle, fighter and so on.

ASSEMBLING A FORCE

Rather than assembling a Force for individual scenarios, the first step in using the linked-scenario system is to create the *total* Force employed by each side. This represents not only the troops and vehicles that take part in a battle but also any reserves and Support Vehicles. For example, if players wish to fight company-sized battles, they may choose to build a battalion-sized Force to provide replacement Elements and allow the player to tailor his Force to individual scenarios, perhaps using heavy 'Mechs and armor in one scenario and light 'Mechs and VTOLs in another.

The size of the Force will determine the likely length of the campaign—the larger the Force, the longer the campaign (or the larger its battles). Both sides should begin with Forces of comparable size. The following Battle Values (BV) are suggested for different battle lengths. Players may also opt to keep BV in reserve for repair and re-supply. Divide the Force into distinct Units (companies or Trinaries as appropriate). These will form the side's operational Forces in the campaign.

ACTIONS

Battles take place within the framework of a Strategic Turn that comprises a number of actions (including combat) within a discrete period of time. This is usually a day, but if players agree, it may be increased (for example, to a week) or shortened (perhaps to 6 hours) to reflect different tempos of combat. The main impact of changing this timing is the amount of time available when integrating with time-related mechanics, such as maintenance, repairs and so on (see *Maintenance, Repairs, Customization and Salvage*, p. 166). Within each Strategic Turn, the players take one or more actions that are notionally simultaneous. Each player may give one action to each Unit (usually a company or Trinary, though players may, if they all agree, use lances and Stars instead) in his or her Force, and no Element ('Mech, vehicle, infantry platoon and so on) may be given more than one order in a Strategic Turn. The potential actions fall into two categories: combat orders and non-combat orders. These should be written down by each player and revealed simultaneously.

A "Strategic Move" is the amount of distance the Force can move (in kilometers) at the rate of its slowest Element dur-

ing a Strategic Turn. (Note: do not count structures and support staff when determining this movement rate, and count infantry only if the infantry lacks access to sufficient transports for faster movement.) To determine this rate, multiply the slowest Element's Walking/Cruising/Safe Thrust MPs by 10.8 to find its movement distance (in kilometers) over the course of one hour; a Strategic Move is not a "sprint" and so the Force will move at it's "cruising" speed to most effectively cover distance. Multiply this by the number of hours in the Strategic Turn (whatever the players have determined) to find the final movement distance. Remember that, at standard tactical scale, one ground mapsheet equals a half-kilometer of distance. If an alternative map scale is used to abstract a Force's strategic movement, the players must adjust any map-based movement distances based on the Strategic Movement rate.

CAMPAIGN SCORE

The number of victories and losses a side suffers in a campaign determines what they and their opponents may do in a Strategic Turn. Each Force begins the campaign with a Campaign Score of 0 (meaning it has not won or lost any battles), which increases or decreases according to the result of scenarios. If a side wins a scenario, increase its campaign score by 1. If the scenario allows for differing levels of victory, this increase is 0.5 for a Marginal Victory, 1 for a Substantial Victory and 2 for a Decisive Victory. The relative level of the campaign scores determines what actions result from the orders issued by each side. If a side loses a scenario (no matter the opponent's victory level) they reduce their campaign score by 1. If the scenario is a draw, the campaign score of both sides remains the same.

Determining Scenarios

When the action orders are revealed, a battle may or may not take place—one or more Units must be assigned Fight or Scout orders. If no such orders are given, no battle takes place and the remaining orders are resolved before the next Strategic Turn begins. If one or more Units receive Fight or Scout orders, those Units (and potentially others) may be involved in one or more battles.

If Units from both sides have Fight orders, those Units will meet in battle. Match each Unit (or multi-Unit group if orders were assigned appropriately) against a single opposing Unit with Fight orders and cross-reference the attacker's campaign score with that of the defender on the Battle Scenario Table (see p. 49) to determine the type of scenario that takes place. Assign troops appropriately per the Force composition rules for the scenarios (see p. 265, *TW*). If more Units on one side have Fight orders than those on the opposing side, assign the remainder against defending and non-combat Units (see below).

If units from only one side have Fight orders, the Units with those orders take the role of attacker and will face any opposing Element with Defend orders (if no opposing Units have Defend orders, randomly determine their opposition from Units with non-combat orders). In this situation, determine the scenario as above but treat the Unit with Fight orders as if its campaign score is 1 higher than it actually is when facing troops with Defend orders, or 3 higher if facing troops with non-combat orders.

If Units from either side have Scout orders, match them against opposing Units (Units with Scout orders first, then Units with Fight or non-combat orders) and determine the scenario using the Raid Scenario Table (see p. 49).

If one side has committed more Units to Fight or Scout orders than the opponent has Units, the controlling player may assign multiple Units against the opposing Force. In this case, treat the combined Force as if its campaign score is 2 points higher that it actually is. Units combined at the orders stage do not gain this bonus (though they are committed to battle as a single Force).

Determining Attacker and Defender

If only one side in a scenario has Fight or Scout orders, that side is considered the attacker. If both sides have Fight or Scout orders,

COMBAT ORDERS TABLE

Combat Orders
Fight: A Unit with this order is actively seeking to engage the enemy and may be considered the aggressor in a scenario (see *Determining Attacker and Defender* below). If more than one Unit receives the Fight order, the player should specify whether the Units are working together as a combined Force (in which case they are treated as a single Unit when determining their opposition) or as distinct Forces.
Scout: A Unit given the Scout order will seek to make contact with the enemy Force to determine its strength and position, but will attempt to avoid a pitched battle.
Defend: A Unit with this order is combat ready but not actively seeking battle or enemy Forces.

Non-Combat Orders
Move: A Unit with this order may make a strategic move (if maps are being used to determine location) at twice its normal movement rate, but is not ready to fight.
Repair: A Unit with this order may repair constituent Elements according to the standard repair and salvage rules (see p. 166) as the time allocated to the Strategic Turn allows. Such Units may not move or fight.
Rest: If the Fatigue rules (see p. 41) are being used, the Unit will reduce its Fatigue Points by 1 providing it is not attacked during the current turn.
Supply: A Unit with this order may spend unused BV to purchase equipment (weapons, armor and so on) for repairing or customizing Units (see *Obtaining Replacement Parts*, p. 178).

FORCE SIZE TABLE

Campaign Type	Force Size	BV
Small/Short	Company	15,000
Medium/Moderate	Reinforced Company/Battalion	35,000
Large/Long	Battalion/Reinforced Battalion	55,000
Huge/Very Long	Reinforced Battalion/Regiment	120,000

BATTLE SCENARIO TABLE

Defender Campaign Score	Attacker Campaign Score				
	< –5	–4.99 to –1	–0.99 to 0.99	1 to 4.99	5+
< –5	SU	HS	BK	TC	BA
–4.99 to –1	SU	SU	HS	BK	TC
–0.99 to 0.99	HTL	SU	SU	HS	BK
1 to 4.99	HTL	HTL	SU	SU	HS
5+	EX	HTL	HTL	HTL	SU

RAID SCENARIO TABLE

Defender Campaign Score	Attacker Campaign Score				
	< –5	–4.99 to –1	–0.99 to 0.99	1 to 4.99	5+
< –5	PB	EX	HS	RR	RR
–4.99 to –1	EX	PB	EX	HS	RR
–0.99 to 0.99	EX	EX	PB	EX	HS
1 to 4.99	SU	EX	EX	PB	EX
5+	BK	SU	EX	EX	PB

SU = Standup Fight **HS** = Hide and Seek **HTL** = Hold the Line **EX** = Extraction **BK** = Breakthrough
TC = The Chase **PB** = Probe (New) **BA** = Base Attack (New) **RR** = Recon Raid (New)

the side with the higher campaign score is the attacker. If both sides have the same campaign score, the side that won most recently is the attacker. If no battles have been fought, determine who is the attacker and who the defender randomly.

Salvage and Control of the Battlefield

The side that remains in possession of the battlefield at the end of a scenario (irrespective of whether that side was the victor in the scenario) may use a Repair order to salvage Units that were crippled or destroyed in the scenario (see p. 191). If neither side has Elements remaining on the battlefield (for example, as a result of a mutual kill), only the scenario winner may salvage material.

If neither side has Elements remaining on the battlefield and the scenario was a draw, neither side may salvage material from the battlefield, but the potential salvage remains available. To claim this salvage in a subsequent turn, one or both players should issue Fight orders to a Unit and specify that the salvage is the objective of the battle. If the opponent likewise issues Fight orders, a Stand-Up Fight scenario occurs (irrespective of the sides' campaign scores), with the salvage added to any that results from the battle. In any other combination of orders, no battle occurs and the side with the Fight orders claims the salvage.

WINNING THE CAMPAIGN

Campaigns may be won by several methods. The first is to destroy every opposing Element, a considerable undertaking in large battles. The second is to achieve a Decisive Victory in a base attack scenario, meaning to kill and/or capture the defender's supplies and command facilities. The third is to consistently outperform the opposition, destroying their morale and forcing them to surrender. This occurs if, in the order-writing phase, one side has an unmodified campaign score at least 10 points higher than the opponent's.

Winning the campaign leaves the victor in command of the battlefield, together with its attendant structures, resources and population. Any enemy equipment (but not personnel) in the captured area becomes the possession of the victor and may be used to bolster his Force, sold or ransomed back to its previous owner. For example, if the objective was control of a planet and an enemy demi-company surrendered at the end of the campaign, the winner gains control of that planet and the demi-company's equipment.

NEW SCENARIOS

The following scenarios may be used on their own in the same manner as those on pages 258-262 of *TW* or as part of the linked scenario system.

PROBE

In a probe, small Forces from each side clash on the battlefield. While not shirking from battle, neither side wishes to sustain substantial damage that they will be forced to repair.

Force Composition

Both sides should deploy a lance, Star or Level II Formation (as appropriate to their faction) and, if using the BV system, spend the same number of points.

Victory Conditions

The scenario ends when all the units on one side have been destroyed or retreated off the map. Each side gains 1 Victory Point for each enemy Element destroyed and half a point for every non-destroyed enemy Element that sustained critical damage. However, each side loses 1 Victory Point for every friendly Element destroyed and half a victory point for each friendly Element that sustained critical damage. The side with the higher score wins.

RECON RAID

In a recon raid, the attacker is more concerned with completing his mission than damaging enemy Forces, though if he can do both, he will. In such missions, the attacker is a small Force sent to identify the composition of a larger enemy group.

Mapsheets with hills and trees are ideal for recon raids, as are urban maps when buildings are used, because both provide the defender with concealment from the attacker's sight. After the attacking player selects an entry edge, the defending player sets up his Elements, up to half of which may be concealed using the Hidden Units rules (see p. 259, *TW*). No defending Elements may withdraw from the map until at least a quarter of the defending Force has been destroyed.

Force Composition

The attacking Force should be half the size of the defending Force. For example, if the defender is a company-strength unit, the attacker should field 6 units. If using the BV system, the attacker's BV should be half that of the defender.

Victory Conditions

The scenario ends when all the Elements on one side have been destroyed or retreated off the map. The attacker gains 1 Victory Point for each defending Unit he spots. To spot a defending Element, an attacking Unit must have LOS to it and be within 10 hexes. Hidden Elements may be spotted if an attacking Element moves adjacent to them or if they fall within the operational range of an attacking Element's active probe. Each Element that is not spotted by the end of the scenario gives 1 Victory Point to the defender. The side with the higher score is the winner. If the winning side has more points than the opponent but not more than 150 percent of the opponent's score, it is a Marginal Victory. If the winning side has between 150 and 200 percent of the opponent's score, it is a Substantial Victory. If the winner has more than double the opponent's score, it is a Decisive Victory.

BASE ATTACK

In a base attack, the attacker has only one objective in mind: to destroy the defender's ability to wage war. He may accomplish this by destroying the defender's combat units, but more often does it by destroying the defender's supplies and support facilities.

In addition to his Forces, the defending player should place 10 1-hex Medium standard buildings (CF 40) on the map, each containing 10 percent of his stock of supplies (parts, ammunition and so on), and a single 1-hex Hardened standard building (CF 120) representing the defender's command post. Control of these structures determines victory in the game. These structures may be destroyed normally or may be captured by having infantry Forces of one side take sole possession of the building. If infantry leave a building, it remains under the control of the last side to possess it.

The scenario ends when all the Elements of one side are destroyed or retreat off the map, or when all 11 structures are destroyed.

Force Composition

Both sides start with an equal number of Units. If using the BV system, the attacker's BV should equal that of the defender.

Victory Conditions

If all the buildings are destroyed, the attacker wins a Decisive Victory. If all the surviving buildings are captured by the attacker and the defender's Forces retreat or are destroyed, the attacker wins a Decisive Victory.

If the attacker destroys more than 8 but not all of the buildings before being destroyed or retreating from the map, he wins a Substantial Victory.

If the attacker destroys between 4 and 7 buildings before being destroyed or retreating from the map, he wins a Marginal Victory.

If 1-3 buildings are destroyed before the attacker is destroyed or retreats from the map, the defender wins a Marginal Victory.

If no buildings are destroyed before the attacker is destroyed or retreats from the map, the defender wins a Decisive Victory.

RANDOM AEROSPACE ASSIGNMENT TABLES

Unlike the 'Mech tables, the random aerospace assignment tables in *TW* are generic. The following tables provide faction-specific aerospace units to work hand-in-hand when quickly generating scenarios.

The following annotations are in addition to those mentioned on page 266 of *TW*: (3039) is *Technical Readout: 3039*; (3075) is *Technical Readout: 3075*.

Unlike the *Total Warfare* tables, which only display the base configuration of a design as shown in a Technical Readout, many of the aerospace units listed below are variants of a given chassis. For ease of use (and because many of these designs are not the stock designs presented in a Technical Readout), the tables have been annotated to show which record sheet books (instead of Technical Readouts) contain which units: (3039) is *Record Sheets: 3039*; (3050U) is either *Record Sheets: 3050 Upgrade, Star League and Clan* or *Record Sheets: 3050 Upgrade, Inner Sphere*; (3055U) is *Record Sheets: 3055 Upgrade*; (3057) is *Record Sheets 3057, Revised*; (3058U) is *Record Sheets: 3058 Upgrade*; (3060) is *Record Sheets: 3060*; (3067) is *Record Sheets: 3067*; (PU) is *Record Sheets: Phoenix Upgrade*; (3075) is *Record Sheets: 3075*. All these record sheet books can be purchased in PDF format for ease of printing from http://www.battlecorps.com/catalog.

Additional Faction Random Assignment Tables: Following the aerospace tables, additional random assignment tables provide specific lists of 'Mechs and aerospace fighters for those factions with fiction in *Tactical Operations* as well as *Strategic Operations*.

RANDOM AEROSPACE ASSIGNMENT TABLE: INNER SPHERE 1

Light Aerospace Fighters

2D6	House Kurita	House Davion	House Liao	House Marik
2	S-7 Sai [40] (3039)	TR-7 Thrush [25] (3039)	SB-27 Sabre [25] (3075)	SYD-Z1 Seydlitz [20] (3039)
3	THK-63 Tomahawk [40] (3050U)	DAR0-1B Dagger [45] (3067)	F-11-RR Cheetah [25] (3039)	CNT-1D Centurion [30] (3075)
4	SYD-Z1 Seydlitz [20] (3039)	SYD-Z1 Seydlitz [20] (3039)	SPR-H5 Sparrowhawk [30] (3039)	F-11-R Cheetah [25] (3039)
5	SB-27 Sabre [25] (3075)	SYD-Z2A Seydlitz [20] (3039)	F-11-R Cheetah [25] (3039)	TR-7 Thrush [25] (3039)
6	SL-21 Sholagar [35] (3039)	SPR-6D Sparrowhawk [30] (3039)	TR-7 Thrush [25] (3039)	F-12-S Cheetah [25] (3039)
7	SL-21 Sholagar [35] (3039)	SPR-H5 Sparrowhawk [30] (3039)	TR-7 Thrush [25] (3039)	F-11-RR Cheetah [25] (3039)
8	SPR-5HK Sparrowhawk [30] (3039)	CNT-1D Centurion [30] (3075)	TR-8 Thrush [25] (3039)	F-14-S Cheetah [25] (3039)
9	SL-21L Sholagar [35] (3039)	DARO-1 Dagger [45] (3067)*	F-10 Cheetah [25] (3039)	F-12-S Cheetah [25] (3039)
10	F-10 Cheetah [25] (3039)	DARO-1A Dagger [45] (3067)*	SPR-H5 Sparrowhawk [30] (3039)	F-10 Cheetah [25] (3039)
11	S-4 Sai [40] (3039)	SB-27 Sabre [25] (3075)	CNT-1D Centurion [30] (3075)	F-10 Cheetah [25] (3039)
12	S-7 Sai [40] (3039)	SL-21L Sholagar [35] (3039)	F-11-RR Cheetah [25] (3039)	SB-27 Sabre [25] (3075)

Medium Aerospace Fighters

2D6	House Kurita	House Davion	House Liao	House Marik
2	SL-17R Shilone [65] (3039)	CSR-V14 Corsair [50] (3039)	LTN-G15 Lightning [50] (3075)	CSR-V12M Corsair [50] (3039)
3	LTN-G15 Lightning [50] (3075)	TR-10 Transit [50] (3039)	CSR-V12 Corsair [50] (3039)	GTHA-500 Gotha [60] (3050U)
4	LTN-G15 Lightning [50] (3075)	CSR-V20 Corsair [50] (3039)	CMT-3T Troika [65] (3067)	F-92 Stingray [60] (3039)
5	LCF-R16KR Lucifer II [65] (3039)	F-90 Stingray [60] (3039)	F-92 Stingray [60] (3039)	F-92 Stingray [60] (3039)
6	LCF-R16K Lucifer II [65] (3039)	LTN-G15 Lightning [50] (3075)	TR-11 Transit [50] (3039)	F-90 Stingray [60] (3039)
7	SL-17 Shilone [65] (3039)	CSR-V12 Corsair [50] (3039)	TR-10 Transit [50] (3039)	F-94 Stingray [60] (3039)
8	SL-17R Shilone [65] (3039)	F-92 Stingray [60] (3039)	TR-11 Transit [50] (3039)	F-94 Stingray [60] (3039)
9	MIK-O Tatsu [70] (3067)*	HCT-213 Hellcat [60] (3075)	F-94 Stingray [60] (3039)	IRN-SD1 Ironsides [65] (3050U)
10	CSR-V12 Corsair [50] (3039)	LCF-R15 Lucifer [65] (3039)	DFC-O Defiance [55] (3067)*	LTN-G15 Lightning [50] (3075)
11	SL-17AC Shilone [65] (3039)	LCF-R20 Lucifer [65] (3039)	DFC-O Defiance [55] (3067)*	GTHA-500 Gotha [60] (3050U)
12	ON-1 Oni [55] (3067)	HCT-212 Hellcat II [50] (3050U)	LTN-16L Lightning [50] (3075)	TR-10 Transit [50] (3039)

Heavy Aerospace Fighters

2D6	House Kurita	House Davion	House Liao	House Marik
2	HMR-HD Hammerhead [75] (3050U)	SL-15R Slayer [80] (3039)	TRB-D36 Thunderbird [100] (3075)	TRB-D36 Thunderbird [100] (3075)
3	HMR-HD Hammerhead [75] (3050U)	CHP-W7 Chippewa [90] (3039)	CHP-W5 Chippewa [90] (3039)	CHP-W5 Chippewa [90] (3039)
4	STU-K5 Stuka [100] (3039)	CHP-W10 Chippewa [90] (3039)	EGL-R6 Eagle [75] (3075)	HMR-HD Hammerhead [75] (3050U)
5	F-100b Riever [100] (3039)	TRB-D36 Thunderbird [100] (3075)	TR-13A Transgressor [75] (3039)	AHB-443 Ahab [90] (3050U)
6	EGL-R6 Eagle [75] (3075)	EGL-R6 Eagle [75] (3075)	TR-13 Transgressor [75] (3039)	EGL-R5 Eagle [75] (3039)
7	SL-15 Slayer [80] (3039)	STU-K5 Stuka [100] (3039)	TR-13 Transgressor [75] (3039)	F-100a Riever [100] (3039)
8	SL-15R Slayer [80] (3039)	STU-D6 Stuka [100] (3039)	TR-16 Transgressor [75] (3039)	F-700a Riever [100] (3039)
9	F-700b Riever [100] (3039)	TR-13 Transgressor [75] (3039)	F-100a Riever [100] (3039)	F-700a Riever [100] (3039)
10	SL-15R Slayer [80] (3039)	EGL-R6 Eagle [75] (3075)	TR-16 Transgressor [75] (3039)	TR-13A Transgressor [75] (3039)
11	TRB-D5 Thunderbird [100] (3039)	TRB-D36 Thunderbird [100] (3075)	F-100a Riever [100] (3039)	F-100b Riever [100] (3039)
12	SL-15K Slayer [80] (3039)	STU-D7 Stuka [100] (3039)	F-100a Riever [100] (3039)	SHV-O Shiva [85] (3067)*

DropShips

2D6	House Kurita	House Davion	House Liao	House Marik
2	Nagumo (3057)[A]	Overlord-A3 (3067)[S]	Achilles (3057)[A]	Kuan Ti (3057)[A]
3	Condor (3057)[A]	Vengeance (3057)[A]	Avenger (3057)[A]	Intruder (3057)[S]
4	Intruder (3057)[S]	Conquistador (3067)[A]	Leopard CV (3057)[A]	Hamilcar (3057)[A]
5	Leopard CV (3057)[A]	Avenger (3057)[A]	Overlord (3057)[S]	Fury (3057)[A]
6	Excalibur (3057)[S]	Union (3057)[S]	Triumph (3057)[A]	Leopard (3057)[A]
7	Union (3057)[S]	Overlord (3057)[S]	Union (3057)[S]	Union (3057)[S]
8	Leopard (3057)[A]	Triumph (3057)[A]	Leopard (3057)[A]	Leopard CV (3057)[A]
9	Overlord (3057)[S]	Leopard (3057)[A]	Lung Wang (3057)[S]	Condor (3057)[A]
10	Triumph (3057)[A]	Leopard CV (3057)[A]	Excalibur (3057)[S]	Gazelle (3057)[A]
11	Okinawa (3057)[S]	Fortress (3057)[S]	Kuan Ti (3057)[A]	Merlin (3067)[S]
12	Nekohono'o (3067)[S]	Hercules (3057)[S]	Kuan Ti (3057[A]	Hannibal (3057)[A]

*OmniFighter, [A]Aerodyne, [S]Spheroid

RANDOM AEROSPACE ASSIGNMENT TABLE: INNER SPHERE 2

Light Aerospace Fighters				
2D6	House Steiner	ComStar	Word of Blake	Periphery
2	SYD-Z1 Seydlitz [20] (3039)	ZRO-115 Zero [35] (3050U)	RGU-133F Rogue [40] (3050U)	SPR-6D Sparrowhawk [30] (3039)
3	SB-27 Sabre [25] (3075)	ZRO-114 Zero [35] (3050U)	S-HA-OA Shade [35] (3075)*	SB-27 Sabre [25] (3075)
4	SYD-Z3a Seydlitz [20] (3039)	SB-27 Sabre [25] (3075)	ZRO-114 Zero [35] (3050U)	SPR-H5 Sparrowhawk [30] (3039)
5	SB-27 Sabre [25] (3075)	SPD-502 Spad [30] (3050U)	SPD-502 Spad [30] (3050U)	F-10 Cheetah [25] (3039)
6	SYD-Z3 Seydlitz [20] (3039)	SWF-606 Swift [25] (3050U)	SW-606 Swift [25] (3050U)	SB-27 Sabre [25] (3075)
7	SYD-Z2 Seydlitz [20] (3039)	TRN-3T Trident [20] (3050U)	TRN-3T Trident [20] (3050U)	CNT-1D Centurion [30] (3075)
8	CNT-1D Centurion [30] (3075)	TRN-3T Trident [20] (3050U)	THK-63 Tomahawk [45] (3050U)	SYD-21 Seydlitz [20] (3039)
9	SYD-Z2a Seydlitz [20] (3039)	THK-63 Tomahawk [45] (3050U)	F-12-S Cheetah [25] (3039)	TR-7 Thrush [25] (3039)
10	SPR-5H Sparrowhawk [30] (3039)	THK-63 Tomahawk [45] (3050U)	S-HA-O Shade [35] (3075)*	SB-27 Sabre [25] (3075)
11	SYD-Z4 Seydlitz [20] (3039)	RGU-133F Rogue [40] (3050U)	RGU-133E Rogue [40] (3050U)	CNT-1D Centurion [30] (3075)
12	F-10 Cheetah [25] (3039)	ZRO-114 Zero [35] (3050U)	THK-63 Tomahawk [45] (3050U)	SYD-22 Seydlitz [20] (3039)

Medium Aerospace Fighters				
2D6	House Steiner	ComStar	Word of Blake	Periphery
2	F-90S Stingray [60] (3039)	IRN-SD1 Ironsides [65] (3050U)	F-92 Stingray [60] (3039)	SL-17 Shilone [65] (3039)
3	HCT-212 Hellcat II [50] (3050U)	HCT-215 Hellcat II [50] (3050U)	IRN-SD3 Ironsides [65] (3050U)	CSR-V12M Corsair [50] (3039)
4	HCT-213 Hellcat [60] (3075)	F-92 Stingray [60] (3039)	S-RSL-O Rusalka [65] (3075)*	CMT-3T Troika [65] (3067)
5	F-92 Stingray [60] (3039)	IRN-SD1 Ironsides [65] (3050U)	DFC-O Defiance [55] (3067)*	LTN-G15 Lightning [50] (3075)
6	LCF-R16 Lucifer [65] (3039)	IRN-SD1 Ironsides [65] (3050U)	HCT-213B Hellcat II [50] (3050U)	CSR-V12 Corsair [50] (3039)
7	LCF-R15 Lucifer [65] (3039)	HCT-213B Hellcat II [50] (3050U)	HCT-214 Hellcat II [50] (3050U)	HCT-213 Hellcat [60] (3075)
8	CSR-V-20 Corsair [50] (3039)	GTHA-500 Gotha [60] (3050U)	GTHA-500 Gotha [60] (3050U)	LCF-R15 Lucifer [65] (3039)
9	LCF-R20 Lucifer [65] (3039)	GTHA-500 Gotha [60] (3050U)	F-94 Stingray [60] (3039)	LTN-G15 Lightning [50] (3075)
10	CSR-V-12 Corsair [50] (3039)	HCT-214 Hellcat II [50] (3050U)	S-RSL-OA Rusalka [65] (3075)*	F-90 Stingray [60] (3039)
11	LTN-G15 Lightning [50] (3075)	LTN-G15 Lightning [50] (3075)	LTN-G15 Lightning [50] (3075)	TR-10 Transit [50] (3039)
12	SL-27 Samurai [50] (3039)	F-94 Stingray [60] (3039)	LX-2 Lancer [50] (3039)	HCT-213 Hellcat [60] (3075)

Heavy Aerospace Fighters				
2D6	House Steiner	ComStar	Word of Blake	Periphery
2	EGL-R6 Eagle [75] (3075)	HSCL-1-O Huscarl [75] (3067)*	SHV-O Shiva [85] (3067)*	STU-K15 Stuka [100] (3039)
3	F-100 Riever [100] (3039)	HMR-HD Hammerhead [75] (3050U)	S-STR-OA Striga [85] (3075)*	CHP-10 Chippewa [90] (3039)
4	CHP-W5 Chippewa [90] (3039)	RPR-101 Rapier [85] (3050U)	AHB-643 Ahab [90] (3050U)	F-100 Riever [100] (3039)
5	STU-D6 Stuka [100] (3039)	HMR-HE Hammerhead [75] (3050U)	RPR-100 Rapier [85] (3050U)	CHP-W5 Chippewa [90] (3039)
6	CHP-W5 Chippewa [90] (3039)	AHB-443 Ahab [90] (3050U)	RPR-100 Rapier [85] (3050U)	TRB-D36 Thunderbird [100] (3075)
7	CHP-W7 Chippewa [90] (3039)	HMR-HE Hammerhead [75] (3050U)	HMR-HF Hammerhead [75] (3050U)	EGL-R6 Eagle [75] (3075)
8	EST-O Eisensturm [95] (3067)*	EGL-R6 Eagle [75] (3075)	AHB-443 Ahab [90] (3050U)	TRB-D36 Thunderbird [100] (3075)
9	STU-K5 Stuka [100] (3039)	AHB-443 Ahab [90] (3050U)	AHB-443 Ahab [90] (3050U)	EGL-R6 Eagle [75] (3075)
10	RPR-102 Rapier [85] (3050U)	EGL-R6 Eagle [75] (3075)	S-STR-O Striga [85] (3075)*	STU-K5 Stuka [100] (3039)
11	EST-O Eisensturm [95] (3067)*	RPR-100 Rapier [85] (3050U)	F-700 Riever [100] (3039)	SL-15 Slayer [80] (3039)
12	TRB-D36 Thunderbird [100] (3075)	AHB-443 Ahab [90] (3050U)	F-700a Riever [100] (3039)	TR-13 Transgressor [75] (3039)

DropShips				
2D6	House Steiner	ComStar	Word of Blake	Periphery
2	Claymore (3057)[A]	Vengeance (3057)[A]	Hamilcar (3057)[A]	Seeker (3057)[S]
3	Avenger (3057)[A]	Condor (3057)[A]	Overlord (3057)[S]	Leopard CV (3057)[A]
4	Excalibur (3057)[S]	Union (3057)[S]	Overlord (3057)[S]	Seeker (3057)[S]
5	Hercules (3057)[S]	Overlord (3057)[S]	Assault Triumph (3067)[A]	Mule (3057)[S]
6	Leopard CV (3057)[A]	Leopard CV (3057)[A]	Leopard CV (3057)[A]	Leopard (3057)[A]
7	Union (3057)[S]	Union (3057)[S]	Union (3057)[S]	Union (3057)[S]
8	Leopard (3057)[A]	Leopard (3057)[A]	Leopard (3057)[A]	Condor (3057)[A]
9	Overlord (3057)[S]	Model 96 'Elephant' (3075)[S]	Assault Triumph (3067)[A]	Triumph (3057)[A]
10	Intruder (3057)[S]	Triumph (3057)[A]	Fury (3057)[A]	Overlord (3057)[S]
11	Union-X (3067)[S]	Gazelle (3057)[A]	Merlin (3067)[S]	Fury (3057)[A]
12	Fortress (3057)[S]	Fortress (3057)[S]	Hannibal (3057)[A]	Intruder (3057)[S]

*OmniFighter, [A]Aerodyne, [S]Spheroid

RANDOM AEROSPACE ASSIGNMENT TABLE: CLAN

Light Aerospace Fighters

2D6	Wolf	Jade Falcon	Ghost Bear	Snow Raven
2	Swift-C† [25] (3050U)	Batu D [40] (3055U)	Avar Prime [35] (3055U)	Swift-C† [25] (3050U)
3	Vandal D [25] (3055U)	Vandal D [25] (3055U)	Sulla C [45] (3055U)	Tomahawk-C† [45] (3050U)
4	Batu D [40] (3055U)	Avar B [35] (3055U)	Issus† [40] (3067)	Tomahawk-CH† [45] (3050U)
5	Batu C [40] (3055U)	Bashkir Prime [20] (3055U)	Sulla A [45] (3055U)	Sulla A [45] (3055U)
6	Batu Prime [40] (3055U)	Chaeronea† [25] (3067)	Bashkir Prime [20] (3055U)	Bashkir C [20] (3055U)
7	Sulla Prime [45] (3055U)	Sulla B [45] (3055U)	Sulla Prime [45] (3055U)	Bashkir Prime [20] (3055U)
8	Batu A [40] (3055U)	Vandal Prime [25] (3055U)	Batu Prime [40] (3055U)	Bashkir D [20] (3055U)
9	Sulla D [45] (3055U)	Batu Prime [40] (3055U)	Sulla B [45] (3055U)	Chaeronea 3† [25] (3067)
10	Avar D [35] (3055U)	Avar Prime [35] (3055U)	Batu B [40] (3055U)	Sulla Prime [45] (3055U)
11	Vandal C [25] (3055U)	Bashkir C [20] (3055U)	Sulla D [45] (3055U)	Issus† [40] (3067)
12	Avar B [35] (3055U)	Issus† [40] (3067)	Vandal Prime [25] (3055U)	Issus 2† [40] (3067)

Medium Aerospace Fighters

2D6	Wolf	Jade Falcon	Ghost Bear	Snow Raven
2	Turk Prime [50] (3055U)	Visigoth B [60] (3055U)	Turk D [50] (3055U)	Turk A [50] (3055U)
3	Ammon† [65] (3067)	Tyre† [55] (3067)	Turk Prime [50] (3055U)	Jagatai C [70] (3055U)
4	Jagatai A [70] (3055U)	Visigoth C [60] (3055U)	Ammon† [65] (3067)	Visigoth B [60] (3055U)
5	Visigoth A [60] (3055U)	Visigoth A [60] (3055U)	Visigoth A [60] (3055U)	Jagatai D [70] (3055U)
6	Jagatai D [70] (3055U)	Jagatai Prime [70] (3055U)	Jagatai Prime [70] (3055U)	Visigoth Prime [60] (3055U)
7	Visigoth Prime [60] (3055U)	Visigoth D [60] (3055U)	Visigoth Prime [60] (3055U)	Turk Prime [50] (3055U)
8	Jagatai Prime [70] (3055U)	Visigoth Prime [60] (3055U)	Visigoth B [60] (3055U)	Jagatai Prime [70] (3055U)
9	Visigoth B [60] (3055U)	Jagatai A [70] (3055U)	Turk A [50] (3055U)	Jagatai A [70] (3055U)
10	Jagatai B [70] (3055U)	Tyre† [55] (3067)	Ammon† [65] (3067)	Turk B [50] (3055U)
11	Visigoth C [60] (3055U)	Jagatai B [70] (3055U)	Jagatai B [70] (3055U)	Tyre† [55] (3067)
12	Tyre† [55] (3067)	Jagatai C [70] (3055U)	Turk B [50] (3055U)	Visigoth D [60] (3055U)

Heavy Aerospace Fighters

2D6	Wolf	Jade Falcon	Ghost Bear	Snow Raven
2	Xerxes† [85] (3067)	Sabutai A [75] (3055U)	Kirghiz B [100] (3055U)	RPR-200 Rapier† [85] (3050U)
3	Jengiz D [80] (3055U)	Jengiz Prime [80] (3055U)	Xerxes† [85] (3067)	Xerxes† [85] (3067)
4	Scytha Prime [90] (3055U)	Scytha B [90] (3055U)	Jengiz D [80] (3055U)	Kirghiz D [100] (3055U)
5	Kirghiz Prime [100] (3055U)	Kirghiz Prime [100] (3055U)	Kirghiz Prime [100] (3055U)	Kirghiz B [100] (3055U)
6	Jengiz B [80] (3055U)	Scytha D [90] (3055U)	Jengiz Prime [80] (3055U)	Sabutai B [75] (3055U)
7	Jengiz A [80] (3055U)	Scytha Prime [90] (3055U)	Sabutai A [75] (3055U)	Kirghiz Prime [100] (3055U)
8	Kirghiz A [100] (3055U)	Scytha A [90] (3055U)	Jengiz A [80] (3055U)	Sabutai C [75] (3055U)
9	Jengiz C [80] (3055U)	Kirghiz A [100] (3055U)	Kirghiz A [100] (3055U)	Sabutai D [75] (3055U)
10	Scytha B [90] (3055U)	Scytha C [90] (3055U)	Jengiz B [80] (3055U)	Xerxes† [85] (3067)
11	Hydaspes† [95] (3067)	Sabutai D [75] (3055U)	Scytha Prime [90] (3055U)	Hydaspes† [95] (3067)
12	Kirghiz D [100] (3055U)	Hydaspes† [95] (3067)	Hydaspes† [95] (3067)	Sabutai D [75] (3055U)

DropShips

2D6	Wolf	Jade Falcon	Ghost Bear	Snow Raven
2	Lion (3057)[S]	Confederate (3057)[S]	Titan (3057)[A]	Lion (3057)[S]
3	Titan (3057)[A]	Miraborg (3057)[S]	Condor (3057)[A]	Union-C (3057)[S]
4	Union-C (3057)[S]	Broadsword (3057)[A]	Miraborg (3057)[S]	Sassanid (3057)[S]
5	Overlord-C (3057)[S]	Carrier (3057)[A]	Overlord-C (3057)[S]	Broadsword (3057)[A]
6	Union-C (3057)[S]	Union-C (3057)[S]	Confederate (3057)[S]	Carrier (3057)[A]
7	Union-C (3057)[S]	Union-C (3057)[S]	Union-C (3057)[S]	Union-C (3057)[S]
8	Broadsword (3057)[A]	Overlord-C (3057)[S]	Broadsword (3057)[A]	Titan (3057)[A]
9	Overlord-C (3057)[S]	Miraborg (3057)[S]	Sassanid (3057)[S]	Miraborg (3057)[S]
10	Titan (3057)[S]	Overlord-C (3057)[S]	Noruff (3057)[A]	Overlord-C (3057)[S]
11	Overlord-C (3057)[S]	Lion (3057)[S]	Sassanid (3057)[S]	Overlord-C (3057)[S]
12	Carrier (3057)[A]	Titan (3057)[A]	Lion (3057)[S]	Confederate (3057)[S]

†Non-OmniFighter, [A]Aerodyne, [S]Spheroid

RANDOM 'MECH ASSIGNMENT TABLE: MINOR STATES 1

Light 'Mechs

2D6	Outworlds Alliance	Free Rasalhague Republic	Magistracy of Canopus	Marian Hegemony
2	NTK-2Q Nighthawk [35] (3058U)	SDR-7M Spider [30] (3050U)	WSP-3L Wasp [20] (PU)	WLF-1 Wolfhound [35] (3039)
3	WSP-1A Wasp [20] (PU)	TLN-5W Talon [35] (3058U)	STG-6L Stinger [20] (PU)	FS9-S Firestarter [35] (3050U)
4	UM-R63 Urbanmech [30] (3050U)	HM-1 Hitman [30] (3055U)	EGL-2M Eagle [25] (3060)	JA-KL-1532 Jackal [30] (3055U)
5	JVN-10P Javelin [30] (3050U)	HER-3S Hermes (3050U)	ZPH-1 Tarantula [25] (3055U)	JVN-10N Javelin [30] (3039)
6	PNT-9R Panther [35] (3039)	COM-5S Commando [25] (3050U)	D9-G9 Duan Gang [25] (3060)	PNT-9R Panther [35] (3039)
7	STG-3R Stinger [20] (PU)	PNT-10K Panther [35] (3050U)	ABS-3R Anubis [25] (3067)	FS9-C Firestarter [35] (3050U)
8	COM-2D Commando [25] (3039)	JR7-K Jenner [35] (3050U)	RVN-3L Raven [35] (3050U)	COM-4H Commando [25] (3050U)
9	FS9-H Firestarter [35] (3039)	MON-66 Mongoose [35] (3050U)	SDR-7M Spider [30] (3050U)	JVN-10P Javelin [30] (3050U)
10	SDR-7M Spider [30] (3050U)	FS9-S Firestarter [35] (3050U)	ABS-3L Anubis [25] (3067)	PNT-9R Panther [35] (3039)
11	JR7-K Jenner [35] (3050U)	PNT-10K Panther [35] (3050U)	LCT-5V Locust [20] (PU)	LCT-1V2 Locust [20] (PU)
12	LCT-1V Locust [20] (PU)	JR7-K Jenner [35] (3050U)	STG-6L Stinger [20] (PU)	LCT-1V2 Locust [20] (PU)

Medium 'Mechs

2D6	Outworlds Alliance	Free Rasalhague Republic	Magistracy of Canopus	Marian Hegemony
2	PXH-3K Phoenix Hawk [45] (PU)	BEO-12 Beowulf [45] (3060)	PHX-4L Phoenix Hawk [45] (PU)	VL-2T Vulcan [40] (3039)
3	WVR-6R Wolverine [55] (PU)	GRF-6S Griffin [55] (PU)	SHD-7M Shadow Hawk [55] (PU)	DV-6M Dervish [55] (3039)
4	WTH-1 Whitworth [40] (3050U)	DMO-1K Daimyo [40] (3055U)	STY-3C Starslayer [50] (3058U)	CDA-3M Cicada [40] (3050U)
5	ASN-23 Assassin [40] (3050U)	WVR-8K Wolverine [55] (PU)	ASN-23 Assassin [40] (3050U)	HBK-5H Hunchback [50] (3050U)
6	MHL-X1 Marshal [55] (3060)	HCT-5S Hatchetman [45] (3050U)	MHL-X1 Marshal [55] (3060)	PXH-1 Phoenix Hawk [45] (PU)
7	BJ-1 Blackjack [45] (3039)	HBK-5M Hunchback [50] (3050U)	SNK-1V Snake [45] (3055U)	WHT-1H Whitworth [40] (3050U)
8	SHD-2H Shadow Hawk [55] (PU)	BEO-12 Beowulf [45] (3060)	EYK-45A Eyleuka [55] (3075)	HBK-5M Hunchback [50] (3050U)
9	GRF-1N Griffin [55] (PU)	TBT-7M Trebuchet [50] (3050U)	HUR-WO-R4L Huron Warrior [50] (3055U)	ENF-4R Enforcer [50] (3039)
10	CN9-D Centurion [50] (3050U)	VT-5M Vulcan [40] (3050U)	VND-3L Vindicator [45] (3050U)	WVR-6M Wolverine [55] (PU)
11	DV-7D Dervish [55] (3050U)	CRB-30 Crab [50] (3050U)	SYU-2B Sha Yu [40] (3067)	BJ-2 Blackjack [45] (3050U)
12	WLF-1 Wolf Trap [45] (3050U)	FS9-O Firestarter [40] (3058U)*	MS1-O Men Shen [55] (3060)*	VND-3L Vindicator [45] (3050U)

Heavy 'Mechs

2D6	Outworlds Alliance	Free Rasalhague Republic	Magistracy of Canopus	Marian Hegemony
2	DRG-1N Dragon [60] (3039)	QKD-8K Quickdraw [60] (3050U)	LHU-2B Lao-Hu [75] (3067)	TMP-3M Tempest [65] (3055U)
3	HRC-LS-9000 Hercules [70] (3055U)	DRG-1N Dragon [60] (3039)	KSC-3I Koschei [65] (3075)	MAD-3R Marauder [75] (PU)
4	MLN-1C Merlin [60] (3058U)	BHKU-O Black Hawk KU [60] (3058U)*	HEL-3D Helios [60] (3060)	CTF-3D Cataphract [70] (3050U)
5	BMB-12D Bombardier [65] (3050U)	QKD-5K Quickdraw [60] (3050U)	GAL-1GLS Gallowglas [70] (3055U)	ON1-K Orion [75] (3039)
6	MLN-1A Merlin [60] (3058U)	DRG-1N Dragon [60] (3039)	CTF-3D Cataphract [70] (3050U)	WHM-8D Warhammer [70] (PU)
7	MAD-3R Marauder [75] (PU)	DRG-5K Grand Dragon [60] (3050U)	THR-1L Thunder [70] (3055U)	GHR-5J Grasshopper [70] (3050U)
8	ON1-K Orion [75] (3039)	AXM-1N Axman [65] (3050U)	ON1-M Orion [75] (3050U)	CPLT-H2 Catapult [65] (3050U)
9	JM6-DD JagerMech [65] (3050U)	JM6-DD JagerMech [65] (3050U)	JN-G8A Jinggau [65] (3060)	TDR-9M Thunderbolt [65] (PU)
10	GHR-5J Grasshopper [70] (3050U)	GAL-1GS Gallowglas [70] (3055U	OSR-4L Ostroc [60] (PU)	ARC-8M Archer [70] (PU)
11	BL-6-KNT Black Knight [75] (3050U)	ARC-2K Archer [70] (PU)	MAD-5L Marauder [75] (PU)	JM6-H JagerMech [65] (3050U)
12	BMB-05A Bombardier [65] (3050U)	DRG-5K Grand Dragon [60] (3050U)	TSG-9H Ti Ts'ang [60] (3060)	ON1-M Orion [75] (3050U)

Assault 'Mechs

2D6	Outworlds Alliance	Free Rasalhague Republic	Magistracy of Canopus	Marian Hegemony
2	BNC-3S Banshee [95] (3039)	CP-11-G Cyclops [90] (3050U)	Y-H9G Yu Huang [90] (3060)	T-IT-N10M Grand Titan [100] (3055U)
3	THG-11E Thug [80] (3050U)	VKG-2G Viking [85] (3060)	T-IT-N10M Grand Titan [100] (3055U)	CGR-2A2 Charger [80] (3050U)
4	VTR-9B Victor [80] (3050U)	CRK-5003-3 Crockett [85] (3050U)	CP-11-A Cyclops [90] (3050U)	CP-11-H Cyclops [90] (3050U)
5	BLR-1G BattleMaster [85] (3039)	CP-11-A Cyclops [90] (3050U)	STC-2C Striker [80] (3058U)	GOL-2H Goliath [80] (PU)
6	ZEU-6S Zeus [80] (3039)	HTM-27T Hatamoto-Chi [80] (3050U)	VTR-9K Victor [80] (3050U)	LGB-12C Longbow [85] (PU)
7	STK-3F Stalker [85] (3039)	ZEU-9S Zeus [80] (3050U)	AWS-9M Awesome [80] (3050U)	AS7-D Atlas [100] (3039)
8	AS7-D Atlas [100] (3039)	VKG-2F Viking [85] (3060)	STK-5M Stalker [85] (3050U)	STK-3F Stalker [85] (3039)
9	CGR-1A9 Charger [80] (3039)	CRK-5003-1 Crockett [85] (3050U)	LGB-12C Longbow [85] (PU)	ZEU-9S Zeus [80] (3050U)
10	AWS-8Q Awesome [80] (3039)	AS7-K Atlas [100] (3050U)	EMP-6A Emperor [90] (3058U)	AWS-9M Awesome [80] (3050U)
11	HGN-732 Highlander [90] (3050U)	HGN-732 Highlander [90] (3050U)	PLG-3Z Pillager [100] (3058U)	VTR-9K Victor [80] (3050U)
12	CGR-2A2 Charger [80] (3050U)	BZK-A3 Berzerker [100] (3055U)	XNT-3O Xanthos [100] (3075)	MAD-4H Marauder II [100] (PU)

*OmniMech

RANDOM 'MECH ASSIGNMENT TABLE: MINOR STATES 2

Light 'Mechs

2D6	Mercenary	Nova Cats	Pirates	Taurian Concordat
2	HNT-171 Hornet [20] (3050U)	PNT-10K Panther [35] (3050U)	ABS-3L Anubis [30] (3067)	STG-5R Stinger [20] (PU)
3	V4-LNT-K7 Valiant [30] (3075)	AF1A Arctic Fox [30] (3067)*	LCT-1V Locust [20] (PU)	FS9-S Firestarter [35] (3050U)
4	SDR-7M Spider [30] (3050U)	Ocelot [35] (3075)	JVN-10N Javelin [30] (3039)	WSP-3L Wasp [20] (PU)
5	FLC-4P Falcon [30] (3050U)	Jenner IIC 4 [35] (PU)	STG-5R Stinger [20] (PU)	RVN-3L Raven [35] (3050U)
6	SCB-9A Scarabus [30] (3055U)	Hankyu Prime [30] (3058U)*	LDT-1 Brigand [25] (3067)	ABS-3L Anubis [30] (3067)
7	BH-K305 Battle Hawk [30] (3055U)	Hellion Prime [30] (3067)*	STG-3R Stinger [20] (PU)	COM-2D Commando (3050U)
8	TLN-5W Talon [35] (3058U)	Hankyu B [30] (3058U)*	FS9-C Firestarter [35] (3039)	D9-G9 Duan Gung [25] (3060)
9	FNHK-9K Falcon Hawk [35] (3058U)	Ocelot [35] (3075)	LCT-5M Locust [20] (PU)	JR7-D Jenner [35] (3039)
10	FS9-S Firestarter [35] (3050U)	AF1 Arctic Fox [30] (3067)*	COM-4H Commando [25] (3050U)	LCT-5V Locust [20] (PU)
11	WLF-2 Wolfhound [35] (3050U)	SDR-9K Venom [35] (3055U)	UM-R60 UrbanMech [30] (3039)	VLK-QD1 Valkyrie [30] (PU)
12	AF1 Arctic Fox [30] (3060)*	OW-1 Owens [35] (3058U)*	WSP-3L Wasp [20] (PU)	GRM-01A Garm [35] (3060)

Medium 'Mechs

2D6	Mercenary	Nova Cats	Pirates	Taurian Concordat
2	CLNT-2-3U Clint [40] (3050U)	WVR-8K Wolverine [55] (PU)	HCT-3F Hatchetman [45] (3039)	HBK-4G Hunchback [50] (3039)
3	ENF-Enforcer III [50] (3060)	BEO-12 Beowulf [45] (3067)	HER-5S Hermes II [40] (3050U)	VND-3L Vindicator [45] (3050U)
4	GRF-6S Griffin [55] (PU)	Hellhound 2 [45] (3055U)	BJ-2 Blackjack [45] (3050U)	CLNT-3-3T Clint [40] (3050U)
5	CN9-D Centurion [50] (3050U)	Nobori-nin Prime [50] (3058U)*	HBK-5H Hunchback [50] (3050U)	HCT-3F Hatchetman [45] (3039)
6	SHD-2H Shadow Hawk [55] (PU)	Shadow Cat Prime [45] (3058U)*	GRF-1N Griffin [55] (PU)	HUR-WO-R4L Huron Warrior [50] (3055U)
7	WVR-8K Wolverine [55] (PU)	Nobori-nin H [50] (3058U)*	PXH-1 Phoenix Hawk [45] (PU)	MHL-X1 Marshal [55] (3060)
8	HOP-4D Hoplite [55] (3050U)	Shadow Cat A [45] (3058U)*	WVR-6R Wolverine [55] (PU)	BJ-2 Blackjack [45] (3050U)
9	LNX-9Q Lynx [55] (3058U)	Wyvern IIC [45] (3060)	WHT-1H Whitworth [40] (3050U)	SNK-1V Snake [45] (3055U)
10	GRM-R-PR29 Grim Reaper [55] (3055U)	Nobori-nin N [50] (3058U)*	CNS-5M Cronus [55] (3067)	PXH-4L Phoenix Hawk [45] (PU)
11	STY-3C Starslayer [50] (3058U)	Arctic Wolf [40] (3060)	MHL-X1 Marshal [55] (3060)	DV-7D Dervish [55] (3050U)
12	UZL-3S Uziel [50] (3067)	Shadow Hawk IIC4 [45] (PU)	VND-3L Vindicator [45] (3050U)	SHD-7M Shadow Hawk [55] (PU)

Heavy 'Mechs

2D6	Mercenary	Nova Cats	Pirates	Taurian Concordat
2	RFL-3N Rifleman [60] (PU)	BHKU-O Black Hawk-KU [60] (3058U)*	TDR-9M Thunderbolt [65] (PU)	TDR-5S Thunderbolt [65] (PU)
3	CTS-6Y Cestus [65] (3058U)	DRG-5K Grand Dragon [60] (3050U)	ON1-M Orion [75] (3050U)	BL6-KNT Black Knight [75] (3050U)
4	MLN-1A Merlin [60] (3058U)	Nova Cat D [70] (3060)*	OSR-2C Ostroc [60] (PU)	CPLT-C1 Catapult [65] (3039)
5	WR-DG-02FC War Dog [75] (3055U)	Nova Cat B [70] (3060)*	CPLT-H2 Catapult [65] (3050U)	ARC-6W Archer [70] (PU)
6	BNDR-01A Bandersnatch [75] (3055U)	Nova Cat Prime [70] (3060)*	WHM-8D Warhammer [70] (PU)	GHR-5J Grasshopper [70] (3050U)
7	MAD-9M2 Marauder [75] (PU)	Nova Cat Prime [70] (3060)*	MAD-3R Marauder [75] (PU)	TSG-9H Ti Ts'ang [60] (3060)
8	WHM-8D Warhammer [70] (PU)	Nova Cat A [70] (3060)*	ARC-2R Archer [70] (PU)	MAD-5L Marauder [75] (PU)
9	ARC-8M Archer [70] (PU)	Nova Cat C [70] (3060)*	GHR-5J Grasshopper [70] (3050U)	ON2-M Orion [75] (3050U)
10	GHR-5J Grasshopper [70] (3050U)	Nova Cat B [70] (3060)*	OTL-6D Ostol [60] (PU)	CTF-3L Cataphract [70] (3050U)
11	MTR-5K Maelstrom [75] (3058U)	Ha Otoko [65] (3060)	JM6-H JagerMech [65] (3050U)	WHM-8D Warhammer [70] (PU)
12	DFN-3S Defiance [75] (3075)	Mad Cat Prime [75] (3050U)*	ARC-8M Archer [70] (PU)	OSR-4C Ostroc [60] (PU)

Assault 'Mechs

2D6	Mercenary	Nova Cats	Pirates	Taurian Concordat
2	ANH-2A Annihilator [100] (3050U)	Highlander IIC [90] (3060)	GOL-2H Goliath [80] (PU)	BNC-3S Banshee [95] (3039)
3	MAD-4A Marauder II [100] (PU)	AS7-K Atlas [100] (3050U)	LGB-0W Longbow [85] (PU)	DVS-1D Devastator [100] (3058U)
4	HGN-732 Highlander [90] (3050U)	EMP-6A Emperor [95] (3055U)	AWS-9M Awesome [80] (3050U)	Y-H9G Yu Huang [90] (3060)
5	BKW-7R Black Watch [85] (3060)	PLG-3Z Pillager [100] (3058U)	CGR-2A2 Charger [80] (3050U)	EMP-6A Emperor [90] (3055U)
6	VTR-9K Victor [80] (3050U)	Mad Cat Mk. II [90] (3067)	STK-3F Stalker [85] (3039)	STK-5M Stalker [85] (3050U)
7	NSR-9J Nightstar [95] (3058U)	Masakari Prime (3050U)*	AS7-D Atlas [100] (3039)	AWS-9M Awesome [80] (3050U)
8	MR-V2 Cerberus [95] (3055U)	Mad Cat Mk. II [90] (3067)	ZEU-9S Zeus [80] (3050U)	AS7-D Atlas [100] (3039)
9	SRC-3C Sirocco [95] (3060)	Dire Wolf Prime [100] (3050U) *	VTR-9K Victor [80] (3050U)	PLG-3Z Pillager [100] (3058U)
10	BNC-3S Banshee [95] (3039)	Supernova [90] (3058U)	BLR-1G BattleMaster [85] (PU)	VTR-9K Victor [80] (3050U)
11	EMP-6A Emperor [95] (3055U)	Warhammer IIC 4 [80] (PU)	CP-11-H Cyclops [90] (3050U)	ZEU-9S Zeus [85] (3050U)
12	XNT-3O Xanthos [100] (3075)	Turkina Prime [95] (3058U)*	MAD-4H Marauder II [100] (PU)	CGR-2A2 Charger [80] (3050U)

*OmniMech



RANDOM AEROSPACE ASSIGNMENT TABLE: MINOR STATES 1

Light Aerospace Fighters

2D6	Outworlds Alliance	Free Rasalhague Republic	Magistracy of Canopus	Marian Hegemony
2	Chaeronea [25] (3067)	SB-29 Sabre [25] (3075)	SPR-6D Sparrowhawk [30] (3039)	SB-27 Sabre [25] (3075)
3	TRN-T3 Trident [20] (3050U)	SYD-Z3A Seydlitz [20] (3039)	SB-27 Sabre [25] (3075)	SYD-22 Seydlitz [20] (3039)
4	SYD-Z2A Seydlitz [20] (3039)	SYD-Z4 Seydlitz [20] (3039)	SPR-H5 Sparrowhawk [30] (3039)	TR-7 Thrush [25] (3039)
5	CNT-1D Centurion [30] (3075)	SB-27 Sabre [25] (3075)	F-10 Cheetah [25] (3039)	SYD-21 Seydlitz [20] (3039)
6	SB-27 Sabre [25] (3075)	SL-21L Sholagar [35] (3039)	SB-27 Sabre [25] (3075)	F-10 Cheetah [25] (3039)
7	SYD-Z4 Seydlitz [20] (3039)	SL-21L Sholagar [35] (3039)	CNT-1D Centurion [30] (3075)	SB-27 Sabre [25] (3075)
8	SPR-H5 Sparrowhawk [30] (3039)	CNT-1D Centurion [30] (3057)	SYD-21 Seydlitz [20] (3039)	CNT-1D Centurion [30] (3075)
9	SL-21 Sholagar [35] (3039)	SL-22 Sholagar [35] (3039)	TR-7 Thrush [25] (3039)	SPR-H5 Sparrowhawk [30] (3039)
10	CRX-O Corax [30] (3067)*	F-11 Cheetah [25] (3039)	SL-21 Sholagar [35] (3039)	SL-21 Sholagar [35] (3039)
11	SPD-502 Spad [30] (3050U)	SYD-Z4 Seydlitz [20] (3039)	CNT-1D Centurion [30] (3075)	CNT-1D Centurion [30] (3075)
12	Bashkir Prime [20] (3055U)*	S-4 Sai [40] (3039)	SYD-22 Seydlitz [20] (3039)	SPR-6D Sparrowhawk [30] (3039)

Medium Aerospace Fighters

2D6	Outworlds Alliance	Free Rasalhague Republic	Magistracy of Canopus	Marian Hegemony
2	IRN-SD1 Ironsides [65] (3050U)	SL-17AC Shilone [65] (3039)	DFC-O Defiance [55] (3067)*	LTN-G15 Lightning [50] (3075)
3	Turk Prime [50] (3055U)*	SL-25 Samurai [50] (3039)	CSR-V12M Corsair [50] (3039)	TR-10 Transit [50] (3039)
4	LCF-R15 Lucifer [65] (3039)	SL-17R Shilone [65] (3039)	LTN-G15 Lightning [50] (3075)	HCT-213 Hellcat [60] (3075)
5	SL-17R Shilone [65] (3039)	LCF-R16K Lucifer II [65] (3039)	CMT-3U Troika [65] (3067)	LTN-G15 Lightning [50] (3075)
6	SL-17R Shilone [65] (3039)	LCF-R16KR Lucifer II [65] (3039)	CMT-3T Troika [65] (3067)	CSR-V12 Corsair [50] (3039)
7	LTN-16O Lightning [50] (3075)	SL-17R Shilone [65] (3039)	HCT-213 Hellcat [60] (3075)	LCF-R15 Lucifer [65] (3039)
8	HCT-313 Hellcat [60] (3075)	SL-17 Shilone [65] (3039)	LCF-415 Lucifer [65] (3039)	HCT-213 Hellcat [60] (3075)
9	CSR-V12 Corsair [50] (3039)	LTN-G15 Lightning [50] (3039)	F-90 Stingray [60] (3039)	F-90 Stingray [60] (3039)
10	F-90 Stingray [60] (3039)	CSR-V14 Corsair [50] (3039)	TR-10 Transit [50] (3039)	LTN-G15 Lightning [50] (3075)
11	SL-25 Samurai [50] (3039)	Oni ON-1 [55] (3067)	LTN-16L Lightning [50] (3075)	CSR-V20 Corsair [50] (3039)
12	SL-17 Shilone [65] (3039)	LCF-R15 Lucifer [65] (3039)	CSR-V20 Corsair [50] (3039)	SL-17 Shilone [65] (3039)

Heavy Aerospace Fighters

2D6	Outworlds Alliance	Free Rasalhague Republic	Magistracy of Canopus	Marian Hegemony
2	Sabutai Prime [75] (3055U)*	F-100b Riever [100] (3039)	STU-K15 Stuka [100] (3039)	EGL-R6 Eagle [75] (3075)
3	STU-K10 Stuka [100] (3039)	TRB-D36 Thunderbird [100] (3075)	CHP-W10 Chippewa [90] (3039)	TR-13 Transgressor [75] (3039)
4	F-100 Riever [100] (3039)	SL-15K Slayer [80] (3039)	F-100 Riever [100] (3039)	STU-K5 Stuka [100] (3039)
5	TRB-D36 Thunderbird [100] (3075)	EGL-R6 Eagle [75] (3075)	CHP-W5 Chippewa [90] (3039)	TRB-D36 Thunderbird [100] (3075)
6	SL-15 Slayer [80] (3039)	SL-15R Slayer [80] (3039)	TRB-D36 Thunderbird [100] (3075)	EGL-R6 Eagle [75] (3075)
7	STU-K5 Stuka [100] (3039)	HSCL-1-O Huscarl [75] (3067)*	EGL-R6 Eagle [75] (3075)	TRB-D36 Thunderbird [100] (3075)
8	SL-15R Slayer [80] (3039)	SL-15 Slayer [80] (3039)	TRB-D36 Thunderbird [100] (3075)	EGL-R6 Eagle [75] (3075)
9	EGL-R6 Eagle [75] (3075)	F-100 Riever [100] (3039)	EGL-R6 Eagle [75] (3075)	CHP-W10 Chippewa [90] (3039)
10	CHP-W5 Chippewa [90] (3039)	STU-K5 Stuka [100] (3039)	STU-K5 Stuka [100] (3039)	F-100 Riever [100] (3039)
11	STU-K10 Stuka [100] (3039)	TRB-D46 Thunderbird [100] (3075)	TR-13 Transgressor [75] (3039)	CHP-W10 Chippewa [90] (3039)
12	RPR-100 Rapier [85] (3050U)	HSCL-1-OA Huscarl [75] (3067)*	TRB-D46 Thunderbird [100] (3075)	STU-K15 Stuka [100] (3039)

DropShips

2D6	Outworlds Alliance	Free Rasalhague Republic	Magistracy of Canopus	Marian Hegemony
2	Overlord (3057)[S]	Overlord (3057)[S]	Dictator (3075)[S]	Seeker (3057)[S]
3	Gazelle (3057)[A]	Gazelle (3057)[A]	Leopard CV (3057)[A]	Leopard CV (3057)[A]
4	Triumph (3057)[A]	Triumph (3057)[A]	Overlord (3057)[S]	Seeker (3057)[S]
5	Leopard CV (3057)[A]	Leopard CV (3057)[A]	Triumph (3057)[A]	Mule (3057)[S]
6	Union (3057)[S]	Union (3057)[S]	Union (3057)[S]	Leopard (3057)[A]
7	Leopard (3057)[A]	Leopard (3057)[A]	Leopard (3057)[A]	Union (3057)[S]
8	Gazelle (3057)[A]	Gazelle (3057)[A]	Condor (3057)[A]	Condor (3057)[A]
9	Leopard (3057)[A]	Union (3057)[S]	Mule (3057)[S]	Triumph (3057)[A]
10	Union (3057)[S]	Triumph (3057)[A]	Seeker (3057)[S]	Overlord (3057)[S]
11	Triumph (3057)[A]	Overlord (3057)[S]	Fury (3057)[A]	Fury (3057)[A]
12	Overlord (3057)[S]	Vengeance (3057)[A]	Seeker (3057)[S]	Intruder (3057)[S]

*OmniFighter, [A]Aerodyne, [S]Spheroid

RANDOM AEROSPACE ASSIGNMENT TABLE: MINOR STATES 2

Light Aerospace Fighters

2D6	Mercenary	Nova Cats	Pirates	Taurian Concordat
2	SB-28 Sabre [25] (3075)	ZRO-114 Zero [35] (3050U)	SPR-6D Sparrowhawk [30] (3039)	SPR-6D Sparrowhawk [30] (3039)
3	SL-21 Sholagar [35] (3039)	S-4C Sai [40] (3039)	SB-27 Sabre [25] (3075)	SB-27 Sabre [25] (3075)
4	TR-7 Thrush [25] (3039)	Swift C [25] (3050U)	SPR-H5 Sparrowhawk [30] (3039)	SPR-H5 Sparrowhawk [30] (3039)
5	F-11 Cheetah [25] (3039)	Chaeronea [25] (3067)	F-10 Cheetah [25] (3039)	F-10 Cheetah [25] (3039)
6	SB-27 Sabre [25] (3075)	Batu A [40] (3055U)*	SB-27 Sabre [25] (3075)	SB-27 Sabre [25] (3075)
7	CNT-1D Centurion [30] (3075)	Sulla Prime [45] (3055U)*	CNT-1D Centurion [30] (3075)	CNT-1D Centurion [30] (3075)
8	SYD-Z4 Seydlitz [20] (3075)	Bashkir B [20] (3055U)*	SYD-21 Seydlitz [20] (3039)	SYD-21 Seydlitz [20] (3039)
9	SPR-6D Sparrowhawk [30] (3039)	S-7 Sai [40] (3039)	TR-7 Thrush [25] (3039)	TR-7 Thrush [25] (3039)
10	SYD-Z2A Seydlitz [20] (3039)	Vandal C [30] (3055U)*	SL-21 Sholagar [35] (3039)	SL-21 Sholagar [35] (3039)
11	SPR-7D Sparrowhawk [30] (3039)	Avar D [35] (3055U)*	CNT-1D Centurion [30] (3075)	CNT-1D Centurion [30] (3075)
12	SYD-Z3A Seydlitz [20] (3039)	S-4C Sai [40] (3039)	SYD-22 Seydlitz [20] (3039)	SYD-22 Seydlitz [20] (3039)

Medium Aerospace Fighters

2D6	Mercenary	Nova Cats	Pirates	Taurian Concordat
2	F-94 Stingray [60] (3039)	MIK-O Tatsu [70] (3067)*	SL-17 Shilone [65] (3039)	SL-17 Shilone [65] (3039)
3	LCF-16KR Lucifer II [65] (3039)	HCT-213B Hellcat II [50] (3050U)	CSR-V12M Corsair [50] (3039)	CSR-V12 Corsair [50] (3039)
4	CSR-V12 Corsair [50] (3039)	Jagatai Prime [70] (3055U)*	HCT-213 Hellcat [60] (3075)	CMT-3U Troika [65] (3067)
5	LCF-R16 Lucifer [65] (3039)	Ammon [65] (3067)	LTN-G15 Lightning [50] (3075)	HCT-213 Hellcat [60] (3075)
6	CSR-V14 Corsair [50] (3039)	Visigoth A [60] (3055U)*	CSR-V12 Corsair [50] (3039)	LTN -G15 Lightning [50] (3075)
7	LTN -G15 Lightning [50] (3075)	Visigoth C [60] (3055U)*	HCT-213 Hellcat [60] (3075)	CMT-3T Troika [65] (3067)
8	HCT-213 Hellcat [60] (3075)	Turk B [50] (3055U)*	LCF-415 Lucifer [65] (3039)	LTN-16T Lightning [50] (3075)
9	F-92 Stingray [60] (3039)	IRN-SD1 Ironsides [65] (3050U)	F-90 Stingray [60] (3039)	TR-10 Transit [50] (3039)
10	TR-10 Transit [50] (3039)	Tyre [55] (3067)	LTN-G15 Lightning [50] (3075)	CSR-V20 Corsair [50] (3039)
11	SL-17R Shilone [65] (3039)	GTHA-500 Gotha [60] (3050U)	TR-10 Transit [50] (3039)	F-90 Stingray [60] (3039)
12	F-90 Stingray [60] (3039)	ON-1 Oni [55] (3067)	CSR-V20 Corsair [50] (3039)	LCF-R15 Lucifer [65] (3039)

Heavy Aerospace Fighters

2D6	Mercenary	Nova Cats	Pirates	Taurian Concordat
2	VLC-5N Vulcan [80] (3075)	EST-R3 Eisensturm [95] (3067)*	STU-K15 Stuka [100] (3039)	VLC-5N Vulcan [80] (3075)
3	TRB-D46 Thunderbird [100] (3075)	Xerxes [85] (3067)	F-100 Riever [100] (3039)	CHP-W5 Chippewa [90] (3039)
4	TR-16 Transgressor [75] (3039)	AHB-443 Ahab [90] (3050U)	CHP-W10 Chippewa [90] (3039)	F-100 Riever [100] (3039)
5	CHP-W7 Chippewa [90] (3039)	HMR-HD Hammerhead [75] (3050U)	TRB-D36 Thunderbird [100] (3075)	CHP-W7T Chippewa [90] (3039)
6	STU-D6 Stuka [100] (3039)	Jengiz A [80] (3055U)*	CHP-W5 Chippewa [90] (3039)	TRB-D36 Thunderbird [100] (3075)
7	EGL-R6 Eagle [75] (3075)	Scytha Prime [90] (3055U)*	EGL-R6 Eagle [75] (3075)	EGL-R6 Eagle [75] (3075)
8	SL-15R Slayer [80] (3039)	Kirghiz B [100] (3055U)*	TRB-D36 Thunderbird [100] (3075)	SL-15 Slayer [80] (3039)
9	F-700a Riever [100] (3039)	Sabutai Prime [75] (3055U)*	EGL-R6 Eagle [75] (3075)	TR-13A Transgressor [75] (3039)
10	TR-13A Transgressor [75] (3039)	RPR-200 Rapier [85] (3050U)	STU-K5 Stuka [100] (3039)	STU-K5 Stuka [100] (3039)
11	TRB-D36 Thunderbird (3039)	Hydaspes [95] (3067)	TRB-D36 Thunderbird [100] (3075)	SL-15R Slayer [80] (3039)
12	VLC-8N Vulcan [80] (3075)	HSCL-1-O Huscarl [75] (3067)*	TR-13 Transgressor [75] (3039)	TRB-D50 Thunderbird [100] (3075)

DropShips

2D6	Mercenary	Nova Cats	Pirates	Taurian Concordat
2	Excalibur (3057)[S]	Broadsword (3057)[A]	Intruder (3057)[S]	Seeker (3057)[S]
3	Intruder (3057)[S]	Overlord-C (3057)[S]	Seeker (3057)[S]	Leopard CV (3057)[A]
4	Mule (3057)[S]	Nekohono'o (3067)[S]	Leopard CV (3057)[A]	Seeker (3057)[S]
5	Triumph (3057)[A]	Overlord-C (3057)[S]	Triumph (3057)[A]	Mule (3057)[S]
6	Leopard (3057)[A]	Union-C (3057)[S]	Union (3057)[S]	Leopard (3057)[A]
7	Union (3057)[S]	Union-C (3057)[S]	Condor (3057)[A]	Union (3057)[S]
8	Seeker (3057)[S]	Broadsword (3057)[A]	Leopard (3057)[A]	Condor (3057)[A]
9	Overlord (3057)[S]	Nekohono'o (3067)[S]	Mule (3057)[S]	Triumph (3057)[A]
10	Condor (3057)[A]	Confederate (3057)[A]	Overlord (3057)[S]	Overlord (3057)[S]
11	Gazelle (3057)[A]	Gazelle (3057)[A]	Seeker (3057)[S]	Fury (3057)[A]
12	Avenger (3057)[A]	Noruff (3057)[A]	Fury (3057)[A]	Intruder (3057)[S]

*OmniFighter, [A]Aerodyne, [S]Spheroid

DESPERATE Hill

STEVEN MOHAN, JR.



THE SKIES OVER BREADBASKET, GREENVELDT
CORAINES, OUTWORLDS ALLIANCE
6 AUGUST 3064

The *Leopard* fell out of the black sky, body flat, nose angled up slightly as she bled velocity, her squat aerodyne shape aglow from the heat of her recent atmospheric entry. Her fuselage was painted a mottled green and gold, her belly a plain white.

She'd be carrying 'Mechs.

Supervisor Joshua Hill of the Coraines Militia absently touched the medallion tucked beneath his olive drab flight suit, reading the shape of a stalk of wheat with his fingers. He thought of it as his Omniss medallion. It kept him close to life: even here, strapped into his cockpit where he would face life's antithesis.

BattleMechs.

His hand tightened on the stick of his STU-K5 *Stuka*.

Hill's radio crackled. "Hey, is that a *Union,* three o'clock high?" asked his wingman, Defender Charles "Snakebite" McKay.

Hill glanced up and saw the pale dot of a spheroid DropShip, its engines flaring molten orange against the midnight blue of high atmosphere.

"Negative," said Hill. "Coraines isn't important enough to attack with more than one lance. I make her a cargo ship, probable *Mule*."

"Oh," said Snakebite, "sure."

He sounded disappointed. Hill shook his head. The kid was fresh out of flight school, but he was good. Already he had a single red star painted on his fuselage just beneath the cockpit, and he was eager for more.

In contrast, Hill had seven confirmed kills. None of them were painted on his aircraft.

"We gonna take her out, Skipper?" asked Guardian Shelley "Top Hat" Kinta. Kinta piloted number three of four birds. Two *Stuka*s and two *Shilone*s, that was all they had to defend a world.

"That DropShip can't hurt our people. What she's carrying, can. We want what's inside."

"So we're *not* going to take her out?" asked Defender Thomas "Big Red" Krajewska.

Hill sighed. "Listen up," he said. "Three and Four, you stand off and hit her port side with your autocannons. Two, cover the *Shilone*s. I'm going to start my run."

"Gonna take all the glory," said Snakebite bitterly.

There is no glory here, Hill wanted to say, it's a dirty and dangerous job and I'm better equipped to do it than you. But he didn't have time for that, so instead he said, "You have your orders, *Defender*."

Then he rolled right and nosed down, dropping into a U-shaped turn that brought him right back up again, standing on his tail, his *Stuka* an arrow pointed at the DropShip's soft belly.

He spared a glance back, saw the two Boomerangs split up, the *Shilone*s juking toward the DropShip, their twin ACs smashing armor on the dropper's port side. Snakebite rolled left, pulling fire away from the smaller *Shilone*s.

Hill pushed his throttle forward, nursing every last newton of thrust out of his GM 300, screaming toward the *Leopard*.

The DropShip opened up with her nose weapons, azure lightning slicing centimeters past his left wing, emerald fire gouging divots in his nose armor.

He juked right-left-up-right, trying to throw off the gunners' solution, then shoved his throttle hard over, arcing out of the steep climb and sending his fighter racing *away* from the dropper.

Hill pulled up into a tight loop, rolling at the same time, and suddenly he was racing toward the *Leopard,* his nose centered on the right rear 'Mech bay door.

Only then did he open up with his weapons.

He loosed a flight of SRMs and then he was juking again, spraying laser fire along the *Leopard*'s starboard quarter as his missiles ran straight and true.

He just had time to see the SRMs blossom into a molten orange fireball and then he nosed down, pushing his *Stuka* into a steep dive as he raced the *Leopard*'s gunners to the deck.

"Boomerangs, come around and put some fire into that new hole."

"Roger, Skipper."

Hill cleared the effective range of the dropper's gunners and pushed his *Stuka* into a lazy loop, climbing again. Ahead of him he saw Top Hat and Big Red pouring the last of their autocannon rounds into the 'Mech bay that he'd opened to sky.

Hill broke low, coming up for another pass at the *Leopard*'s right side, juking through glowing streaks of death, every hit melting irreplaceable composite off his airframe.

He clenched his jaw and held course. Just . . . a little . . . longer.

He popped over the *Leopard*'s right wing, letting loose with a flight of LRMs and then riding his four Exostars all the way in to the shattered door, until he was close enough to pop loose a second flight of SRMs and then skip away.

This time he shot straight up and rolled over.

So his cockpit was turned toward the *Leopard* when his last flight of missiles hit. The roll-up door had been torn to shreds and he saw flashes of incandescent light inside, heard the echo of a massive concussion even over the low growl of air rushing past his cockpit.

Then he saw the 'Mech tumble out the smashed door. It was a *Bandersnatch*, solid turquoise with a blood red battleaxe painted over its left torso, though the paint job had been badly damaged by the same explosions that had ripped the machine free of its restraints. Its left arm was missing, but the machine made an attempt to hook the door frame with its right.

For a second it held.

And then the tortured metal of the frame tore away.

The 'Mech tumbled into the sky, still entangled with a five-meter strip of laminated steel. Behind the *Bandersnatch*, Hill saw the cotton wisps of clouds and the gold and green patchwork of farmland. The 'Mech was on its back, looking up at the sky that had been its undoing.



Hill watched it fall, arm and legs flailing helplessly, desperately trying to grab hold in a world suddenly without purchase.

■

A whoop went up over the general channel as his flight saw the falling 'Mech.

"Lock it down," snarled Hill.

It wasn't that he felt any pity for the *Bandersnatch*'s pilot. The SOB was a stone killer, and worse, he or she piloted a walking obscenity.

But this wasn't a game. People were going to die today.

Maybe a large number of people if he and his flight failed to stop the pirates.

"Let's hit her again," said Snakebite.

"That's a negative," said Hill. "She's too close to the deck. There's no room to maneuver."

He flattened into a low orbit, his pilots following his lead, cutting circles in the sky as they watched the *Leopard* touch down through in long field of winter wheat, tearing up a furrow and scorching the golden crop black. A towering column of black smoke to the east marked where the *Bandersnatch* had come down.

Hill thought about that. Snatches carried three Holly racks, and LRMs weren't a bad way to go if you were being harassed from above. What else was in that *Leopard*?

He glanced up at the *Mule* coming down. If he were the pirates he'd anchor the LZ with the *Leopard*, bring down the cargo ship to cover the debarkation point with another set of guns, and then he'd unload his 'Mechs.

Hill shook his head. No. Right now the pirates were only facing planetary militia. They couldn't take the chance that AAA regular forces would jump into a pirate point and ruin their whole day. First Wing's Second Regiment was only a jump away at Jordan Wais. So the pirates had to move fast.

Which meant they had to get their 'Mechs off and their cargo dropper down in parallel. That gave Hill a small window of opportunity.

Small and dangerous.

"We'll pick off the 'Mechs as they debark. I'll take lead."

"Big surprise," muttered Snakebite.

Hill gritted his teeth, but didn't answer the barb. He didn't have time to debate the kid; his people needed to know what they were facing. "This has to be a grocery run. They're here to load up the *Mule* with food. They need 'Mechs to punch through militia infantry. Good news is, if we can hurt 'em bad enough, they'll pull out."

"What do you figure that means, Skipper?" asked Top Hat. "One, two 'Mechs?"

"Let's say two," said Hill.

"Bad news?" asked Big Red.

"Bad news, is we're going to have to go through the *Leopard* to get the 'Mechs and we're going to have to do it fast."

Something below caught Hill's eyes—one of the doors sliding open. As he watched, a 'Mech walked down the right forward ramp. It was a turquoise HMR-3M *Hammer*. He watched a second *Hammer* and an ARC-4M *Archer* emerge from the other side. All machines loaded out with LRMs tied to Artemis IV fire control.

Snakebite whistled appreciatively. "That's not all the bad news, Skipper."

■

"All right, *Stukas* left and Boomerangs right," said Hill. "Snakebite, primary target is the *Hammer*."

"What about the *Archer*?" asked the boy.

"We only need to bloody their nose. No reason to throw ourselves at the big boy if we don't have to."

Snakebite snorted, but said nothing.

"Just follow my lead, Snakebite. Top Hat, you have lead on the starboard *Hammer*. You need to be jukin' and jivin', boys and girls. Wingmen, remember this is not a convoy. You need to come in behind, but on your own vectors. After first pass, we'll come up and do BDA before swinging around for the next pass. Any questions?"

For once, mercifully, no one had anything to say.

"Good," said Hill. "Let's go."

He pushed his *Stuka* into a power dive, dropping almost straight down, giving the *Leopard* as little target aspect as possible. Hill juked through the streams of fire that rose up toward him from the planet's surface. But there was a basic problem with this set-up.

The pirates knew where they had to end up.

He leveled out, running straight at the turquoise *Hammer*, pouring laser fire into the machine.

The warble of a jump tone filled his cockpit, telling him the *Hammer* had locked on. No matter how he dodged or shimmied, he could not break that shrill call.

Hill flashed on the *Hammer*, an ugly brute with broad shoulders that sported two Coventry five-tubes on either side of the monster's round head.

He saw the bright flash of a missile launch. Double flight.

He dropped his nose, swooped down, arced up, all in one fluid motion.

The first flight of LRMs failed to make the tight turn and intersected with the ground, digging craters in the earth. The second flight caught him along the left wing, shattering armor and tearing into the pair of Exostars there.

His eyes flickered down to his board in time to see the laser status lights blink red.

He pulled back on his stick, climbing away from the little monster, pulling his aircraft over so he could watch Snakebite's attack run.

What he saw sent a shiver of dread wriggling down his spine. Snakebite wasn't lined up on the *Hammer*.

He was going after the *Archer*.

"*Snakebite*," Hill called out. There wasn't time to say anything else.

The young defender punched a barrage into the heavy, but the pirate MechWarrior just stood there and took it.

And then answered back.

The *Archer* loosed a double flight of Doombuds, followed by a salvo of lasers. All targeted on the same place.

Snakebite's cockpit.

The boy's *Stuka* jerked up, and all at once Hill realized Snakebite had lost the bubble. It happened to young pilots sometimes; they found themselves in a bad situation, panicked, and if something interfered with their visibility they lost track of up and down.

Snakebite's fighter flashed past the *Archer*, but the heavy's pilot turned and followed with another double flight of LRMs.

The *Stuka* jerked left and then arrowed into the earth, sending a bright orange fireball rising into the sky.

■

"We got the *Hammer*," said Big Red, but not before it got Top Hat. Lucky hits."

Two dead, thought Hill. He'd lost two pilots. If Snakebite had

listened, they might've taken apart the second *Hammer* and this would all be over now. Instead there were two dead and likely more to come. Hill touched the medallion under his flight suit. Such a high price to pay.

He swallowed hard, forcing himself back to the here and now.

"What's the status of your armor?"

He could hear the hesitation in Big Red's voice. "Skipper, if I take another pass, I'm afraid that *Leopard*'s gonna go Moses on me."

Go Moses. Part the Red Sea.

So Big Red was torn up.

The truth was, he wasn't in much better shape. Hill's forward armor was an ugly patchwork of yellows and reds, he'd lost half his large lasers in the last attack, and he was facing a pair of missile boats with be-yoo-tiful fire control.

The smart move would have been to withdraw.

But he had taken two of their 'Mechs and damaged their DropShip. The pirates had to be enraged. If he let them go, they would do more than steal Breadbasket's harvest. They would brutalize the innocent people of this world. His mouth tasted dry.

He couldn't let that happen.

"Big Red, I want you to start an attack run on the *Leopard*'s starboard side."

"Yes sir," said the boy stiffly.

"*Listen*," said Hill. "I don't want you to *actually* attack. Just draw the attention of the dropper's gunners. I'll do the rest."

"Yes, *sir*," answered Big Red. And then softly, "Godspeed, Skipper."

"Just don't get yourself killed," growled Hill.

Then he put his fighter into a dive.

■

Hill came in fast along the *Leopard*'s port quarter, running a mere five meters above the deck, so low he could almost *feel* the wheat tickling his butt.

Aimed right at the *Hammer*.

The *Hammer* pilot had guts. He set himself and lighted Hill up with his fire control radar.

A jump tone sounded in Hill's ear.

He gritted his teeth and kept on coming.

The *Hammer* fired two flights of missiles.

Hill answered with his own missiles right before he popped up and flashed past the *Hammer*'s LRMs.

The 'Mech's missiles looped around and locked on again. Which was too bad, because there was no way Hill could outrun them and with his damaged armor he wasn't going to survive another hit.

But what the hell. He pumped a flight of SRMs into the *Hammer* right before he passed three, four meters above the machine's head.

And dove for the ground.

He leveled out so low that this time he really *could* feel the wheat tickling his butt.

Just a few centimeters higher than Snakebite's fatal dive.

The shrill jump tone told him the missiles were still locked on his *Stuka*. But the *Hammer* was between him and them.

They hit the pirate 'Mech right in the same place where his missiles had gone in. Both flights. It was enough to do the trick. Suddenly the *Hammer* was swallowed by the fiery explosion of an internal ammunition detonation and Hill stood his fighter up and fled for the sky.

But not before he saw the *Archer* racing back to the DropShip.

LEVI AIR BASE, BREADBASKET, GREENVELDT

After showering and changing into jeans and a well-patched denim work shirt, Hill turned around to find Director Richard Kilaka, the commander of all militia forces on Coraines, standing behind him. Kilaka was a tall, thin man with skin the color of rich, black soil. Quiet and enigmatic, he never spoke unless he had something to say. He was also one of the very few people Hill knew who scared the hell out of him.

Kilaka tossed a vidclip down on the low locker room bench between them. "This is the BattleROM readout from Krajewska's *Shilone*. He caught your engagement with the *Hammer*."

Hill said nothing.

"This is some of the most incredible flying I have ever seen," said Kilaka, a note of awe in his voice.

Hill shook his head. "I don't think so, sir."

"Sure," said Kilaka. "I just said it because I live to blow sunshine up your skirt."

"Look—" said Hill.

"Son, most pilots have to wait to get into the Flying Nightmares." He jabbed his finger at the bench. "I could get you in just with that clip."

"No you couldn't, sir," said Hill. "I'm just a farmer."

He offered Kilaka a respectful nod and then stepped past him, not sparing a single glance for the vidclip or the future it promised.

■

When Hill stepped outside, he found that Old Tuck had pulled Candle out of the stable and hitched her to Hill's wagon. The old man took better care of his horse than he did. Hill shook his head. He'd have to have Tuck out to the house for one of Molly's home-cooked meals as thanks.

He ran his hand along Candle's neck, gentling the horse, breathing in her musky smell. Then he climbed atop the clapboard wagon and took the reins, setting Candle in an easy trot, his hooves clopping against the ferrocrete roadway.

On the horizon he saw a column of black smoke marking the blue sky, smelled the stink of burnt metal and spent explosives on the wind. Suddenly Hill hated combat, the terrible destruction, the loss of life, especially the desperate thrill of it that made it like a drug for some men.

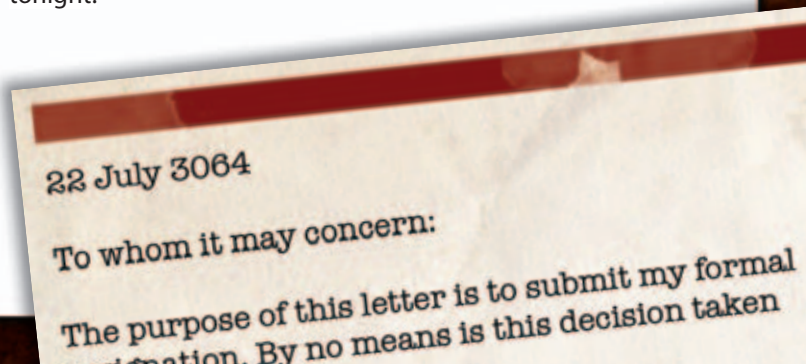
He closed his eyes.

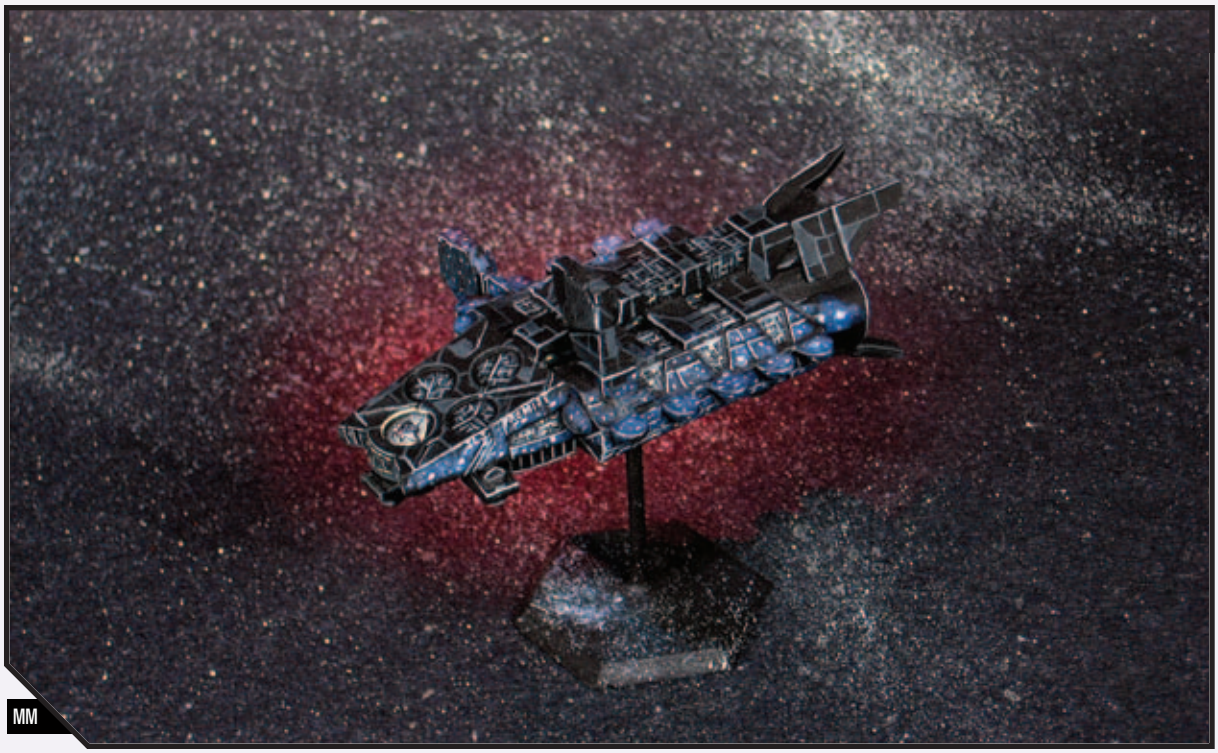
How easy it would be to get hooked.

He was always so careful, holding himself apart from the glory of battle, lest he be caught up in it. He touched the Omniss medallion under his shirt for strength. He had done his time in the militia. He should turn in his resignation, just walk away.

But even as the thought passed through his mind, he knew he never would. No matter what he told himself now, he'd be back up in the sky the next time there was a raid.

He sighed deeply, wondering what Molly had made for dinner tonight.





The Aegis*-class SLS* Promise *proudly displays its Star League Nova Cat insignia.*

The Aerospace Movement section of *Total Warfare* covers the basics of movement, in space and in atmosphere, for most aerospace units. However, some additional rules apply to the movement of those aerospace units presented in this book. A host of additional advanced movement options are also contained in this section, increasing the realism of aerospace unit movement along with the potential enjoyment of a game as players maneuver their forces.

Fighter Squadrons: As the Fighter Squadron rules deal both with movement and combat, as well as how to assemble such units, those rules are found in the General Rules section (see p. 27).

ADVANCED UNITS

The following rules apply to the movement of JumpShips, WarShips, Space Stations and Satellites. Unless otherwise stated, the advanced units below follow all the standard movement rules for aerospace as outlined in the *Aerospace Movement* section of *Total Warfare*.

MOVEMENT SUB-PHASES

The addition of advanced units expands the movement sub-phases of the Movement Phase (Aerospace; see p. 76, *TW*). The expanded sequence is:

1. Space Stations
2. Ground Units
3. JumpShips
4. WarShips
5. Escape Pods/Lifeboats
6. DropShips
7. Small Craft
8. Fighters

JUMPSHIPS

Intended for traveling between star systems, jumping through space by means of their massive Kearny-Fuchida drives, JumpShips are essentially static in most games. Their fusion drives, while designed merely to allow the unit to maintain station, can nonetheless generate sufficient thrust to move in a conventional manner, albeit somewhat more slowly than other aerospace units.

JumpShips may expend thrust points over multiple turns, using the accumulated thrust to change velocity per the same rules that apply to other aerospace units. Any accumulated thrust not used by the maneuver counts toward the next maneuver. JumpShips do not have Safe and Maximum Thrust values; all movement by JumpShips is assumed to be Maximum Thrust.

Additionally, JumpShips mount attitude jets that allow them to change their facing by one hexside per turn; this movement does not count toward the accumulated thrust for the change of

velocity, as noted above. Furthermore, a JumpShip cannot use its attitude jets (that is, make a facing change) in the same turn that it changes its velocity, nor can it expend thrust in that turn. However, the previously accumulated thrust still exists and can be added to by additional thrust on a turn or turns after a hexside change is made.

JumpShips can only operate in space; if they enter an atmosphere or space/atmosphere interface hex, they are immediately destroyed.

An Invader*-class JumpShip with a station-keeping Thrust of 0.1 G has the equivalent of .2 thrust points. On turns 1, 2 and 3, the Invader expends .2 thrust points, for an accumulated .6 thrust points. On Turn 4, the controlling player decides to use the attitude jets to change the JumpShip's facing by 1 hexside; he cannot expend any thrust that turn, and so at the end of Turn 4 still only has a cumulative thrust of .6. On Turn 5, the player expends another thrust point, bringing the total to .8, so that during the Movement Phase (Aerospace) of Turn 6, he will be able to change the* Invader*'s velocity by 1 because he will then have an accumulated Thrust of 1 point to spend.*

WARSHIPS

Despite weighing hundreds of thousands or even millions of tons and being hundreds of meters long, combat JumpShips—WarShips to most people—maneuver little differently from DropShips thanks to their huge drives. Their combination of maneuverability, firepower and armor make them a force to be reckoned with in space combat.

WarShips can only operate in space, lacking the streamlining (if not the raw thrust) to function in atmospheric or space-atmosphere interface hexes. If a WarShip enters a space/atmosphere interface hex, apply a +10 modifier to the Control Roll (see p. 78, *TW*). A WarShip that successfully makes the roll (avoiding damage and entering the space/atmosphere interface hex) can return to space in the following turn if it can spend 4 thrust points. Otherwise it will fall one Atmospheric Row per space turn until it reaches the ground hex row, where it automatically crashes (see, p 81, *TW*).

The effect of a crashing WarShip is based on its size. First, the players must determine which mapsheet of the playing area (if there are multiple mapsheets) is the primary location of the crash site. Next, the damage is determined: for every 100,000 tons, 10 capital-scale damage points, multiplied by the current velocity of the unit when it entered the ground hex row, are applied to every hex of the primary mapsheet as though the crash were an orbit-to-surface attack (see p. 103). Finally, if a WarShip is larger than 1,000,000 tons, that damage is applied not only to the target mapsheet, but to all adjacent mapsheets.

SPACE STATIONS

Space Stations, like JumpShips, are essentially static in aerospace combat. Unlike JumpShips, however, a Space Station's station-keeping drive lacks the power to provide even rudimentary changes in velocity within the context of a game; any repositioning of a station requires hours if not days to achieve, the drive generating only around 0.1 G.

Space Stations mount attitude jets like JumpShips. However, because a Space Station is designed to sit in an orbit and generally not move—it is not designed for even the mild movement a JumpShip might encounter—its attitude jets are weaker. A Space Station's attitude jets provide .2 thrust; just as with a JumpShip making velocity changes, a Space Station can accumulate thrust across several turns to make a facing change. Once a Space Station has accumulated 1 thrust point using its attitude jets, it must make a facing change.

Military Space Stations mount more robust attitude jets and can change 1 hexside per turn.

ADVANCED INITIATIVE

The Advanced Initiative rules determine Initiative on a unit-by-unit basis using Control Rolls (all applicable modifiers to a Control Roll apply). This system takes longer than rolling Initiative once for each side, but it gives better quality crews (and smaller aerospace units) an advantage. The unit with the lowest Initiative moves first, followed by the unit with the second lowest, and progressing to the highest Initiative. For ties, units with the lowest MoS move first. If both units possess the same MoS, re-roll the Control Roll. This system eliminates the use of movement sub-phases.

Dropping Troops: Even when using Advanced Initiative, dropping troops (see p. 22) always move after all other aerospace units have moved (including ground units in zero-g operations). The exception are ejected pilots/lifeboats/escape pods (see p. 26), which always move last after all other aerospace units have moved, including drooping troops.

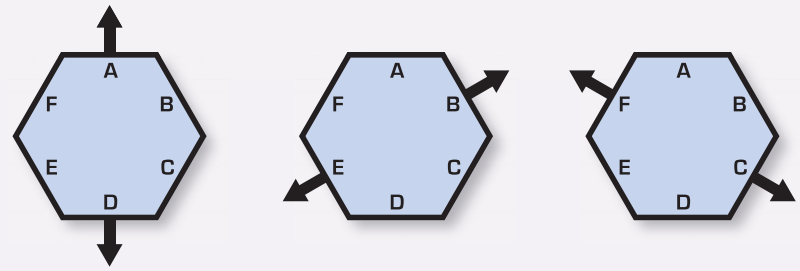
John's fighter pilot has a Piloting Skill of 4. He rolls 2D6 with a result of 6—an MoS of 2. Adding the +3 fighter modifier, the fighter has an Initiative of 5. Simon's DropShip crew also has a Piloting Skill of 4. His 2D6 roll results in a 9, an MoS of 5. For a DropShip, the modifier is 0. The two units tie. However, because the fighter's MoS was lower than the MoS of the DropShip, John must move first.

ADVANCED INITIATIVE TABLE

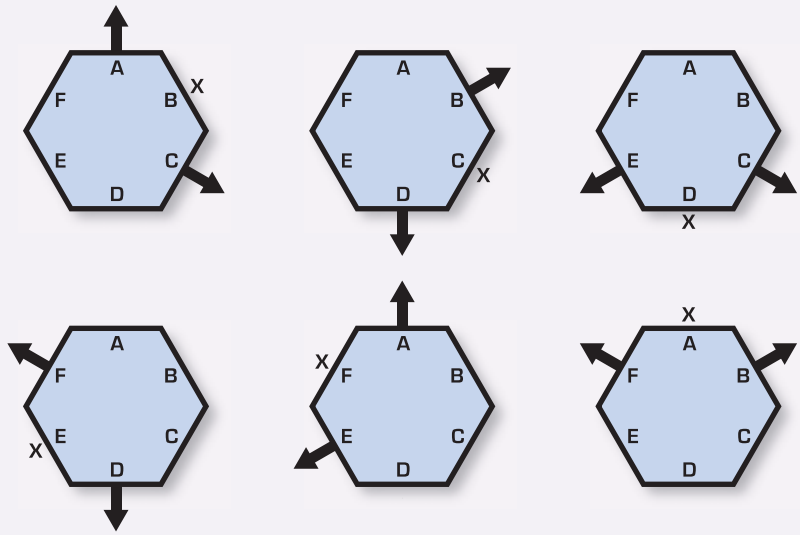
Initiative = Control Roll MoS/MoF + Class Modifier

Class	Modifiers
Fighter	+3*
Small Craft	+0
DropShip	+0
Support Vehicle (aircraft)	–1
WarShip	–3
Airship	–4
JumpShip	–5
Space Station	–5
Ground Unit in Zero-G Ops	–6
Satellite	–7

*Including squadrons



• OPPOSING VECTORS DIAGRAM •



• OBLIQUE VECTORS DIAGRAM •

ADVANCED MOVEMENT

The basic aerospace rules represent a simplification of the mechanics governing movement in space, trading realism for playability. The advanced movement rules simulate a more realistic version, where a unit's heading (direction of movement) may differ from its facing (the direction in which the nose of the unit is pointing). In the advanced movement rules a unit may not decelerate; to slow down, it must alter its facing and apply thrust in a direction that counters its current movement. These rules accommodate a unit flying sideways or even backward, though tracking such maneuvers requires extra record-keeping. In the advanced movement system, facing changes do not affect a unit's heading.

A unit's facing affects firing arcs according to the standard rules and determines the vector to which thrust is applied. Units can change their facing one hexside by spending 1 Thrust Point. A unit can change facing as long as it has Thrust Points available.

A unit's heading and velocity are determined by a system of vectors. The six vectors, labeled A-F, correspond to the six sides of each hex. The A side of each hex is always toward the top of the map, regardless of a unit's facing. A vector is active if thrust is applied while the unit is facing that hexside. A vector is inactive if the unit spends no thrust to move through that hexside.

To use this system, each time a unit spends thrust, note down that number on the record sheet in the appropriate vector (the vector of the unit's facing). Next, determine the effect of spending thrust by consolidating the active vectors. First, consolidate any active opposing vectors (see Opposing Vectors diagram, at left) by subtracting the lowest thrust value from both vectors, reducing one vector to 0. Per standard rules (see p. 76, *TW*), a unit may spend thrust at the start or end of its movement; in advanced movement this is either before any vectors have been applied to the unit or after all vectors have been applied.

Next, consolidate the oblique vectors (see Oblique Vectors diagram, at left). Oblique vectors are pairs of vectors that are both adjacent to the same hexside (F and B, A and C, B and D, and so on). When any pair of oblique vectors is active, subtract the lowest of the two thrust values from both vectors (or from both if they are equal), reducing one (or both) oblique vectors to 0, and add the same value to the thrust value of the vector in between.

For example, if a unit has an A vector of 4 and an C vector of 2, its player would subtract 2 from both values. The C vector would become 0 and thus inactive; the A vector would be reduced to 2, and the B vector between them would be increased by 2. After consolidating all vectors, a unit should have no more than two active vectors. A unit with more than two active vectors must be consolidated again.

After the player has spent the thrust planned for the current movement and the active vectors have been consolidated to one or two, the unit completes its movement by moving the number of hexes and direction indicated by each vector. The unit is assumed to move in a straight line: if the exact path needs to be determined (for example, to decide whether a collision occurred), lay a straight edge between the center of the origin and destination hexes. If the path passes directly between two hexes, the controlling player chooses which hex the unit moves through.

The Advanced Movement diagram, on p. 65, shows the advanced movement system in action. The fighter's nose indicates its facing (in Hex A this corresponds with the hex number 0209), and the small numbers surrounding its hex show the fighter's vectors. A fighter begins the turn in Hex A with a Velocity of 5 in Vector D and a Velocity of 3 in Vector C. If the player spent no thrust at all, his unit would move to the position and facing shown in Hex B by moving 5 hexes aft and 3 hexes aft-right. The fighter would not check for a collision with either of the asteroids; the actual path of movement is shown by the dotted line. Rather than leaving the fighter's movement as is, the player spends 3 Thrust Points at its current facing, increasing Vector A from 0 to 3. He then spends 1 Thrust Point to change facing one hexside to the right, and spends 1 more Thrust Point increasing Vector B to 1 (Figure 1). After the thrust expenditure, the vectors are consolidated. First, opposing vectors are consolidated. In this case, there is one pair of opposing active vectors: A and D. The lesser of the two, A, is reduced by 3 to 0, and the opposing



• ADVANCED AEROSPACE MOVEMENT DIAGRAM •

vector is reduced by 3 to 2 (Figure 2). Next, the player checks for oblique vectors. There is one pair, D and B. The lesser of the two, B, is reduced by 1 to 0, and D is reduced by 1 to 1. The amount subtracted from each (1) is added to the vector in between, in this case C, increasing it to 4. Because there are no more active opposing or oblique vectors, and there are only two active vectors, the fighter's final vectors are now known (Figure 3). After spending 5 Thrust Points on movement as described above, the fighter's final position and facing would be as shown in Hex C. Note that there is no chance of the fighter colliding with the asteroid in Hex E.

ROTATIONAL VECTORS

Players who find the above rules still too rigid may add another factor into their maneuvers—rotational vectors. When using this rule, units using the advanced movement rules that turn hexsides will continue to rotate their facing a number of hexsides to match the rotational vector until thrust is applied to counter the rotation.

In addition to the A-F vectors, two additional vectors apply to such units: clockwise/anticlockwise, opposites that are consolidated normally. These rotational vectors change only the unit's facing and do not affect how a unit moves except in how it expends thrust to chance facing.

Pitch up/pitch down and flip left/roll right may also be considered as rotational vectors, but in the case of these vectors the unit flips end-over only when 2 points of velocity have accumulated in the given direction; 2 Thrust Points are required to stop such a move.

A WarShip facing Hexside A spends 2 Thrust Points to turn clockwise. After doing so, it has a clockwise rotational vector of 2 and rotates its facing two hexsides clockwise to face Hexside C. If it does not spend thrust to counter this rotation, it will continue to change facing next turn, pointing next toward Hexside E (and the turn after that Hexside A and so on). As it happens, the WarShip spends a single Thrust Point counter-clockwise at the start of the next turn. Consolidating the rotational vectors, the counter-clockwise vector is subtracted from the clockwise one, reducing it to 1 and so the WarShip's facing change slows (but does not stop) and it ends the turn facing Hexside D.

A DropShip applies a point of thrust to a left roll vector. In the first turn nothing happens (as there is effectively only 1 point of accumulated velocity), but in the second turn it makes a left roll, reversing its sides, as the accumulator vector matches the two needed to roll the unit. Had 2 points of thrust been put into the roll vector, the DropShip would roll every turn.

RANDOM MOVEMENT

When using Advanced Movement, use the following Random Movement Table for random movement.

RANDOM MOVEMENT (ADVANCED VECTORS) TABLE

1D6	Effect
1	Turn 2 hexsides left
2	Turn 1 hexside left
3	Increase vector corresponding to current facing by 1
4	Increase vector corresponding to current facing by 2
5	Turn 1 hexside right
6	Turn 2 hexsides right

LATERAL AND DECELERATION MOVEMENT

Under these advanced movement rules, a unit can use its maneuvering thrusters to perform lateral or sideslip maneuvers as well as use these thrusters to reduce their "forward" velocity. Once per turn a unit may apply one point of thrust to any facing (except aft), changing their vectors. The cost of this vector change is identical to a facing change.

Damage to a unit's thrusters will increase the MP cost for lateral movement as per Thruster critical hits (see p. 240, *TW*). If the unit is applying vector change directly to its nose, for every two boxes (rounded down) of thruster damage, apply an additional 1 MP to the cost for nose vector change. For example, a DropShip with 2 Thruster boxes marked off on the left side and one Thruster box marked off on the right would pay 2 MP to change nose vector. A WarShip with a destroyed thruster on the left side would pay 2 MP to change the Nose vector, and would be unable to change its left forward or rear vector.

SPECIAL MANEUVERS

While combat acrobatics are largely the realm of fighters, Large Craft have their own range of special maneuvers in and out of combat.



Before | After Yaw | After End-Over

YAWING AND END-OVERS

When using Advanced Movement rules (see p. 64), a "barrel roll" (see p. 85, *TW*) maneuver may be used to swap a unit's nose and aft facings, in effect changing their facing 180 degrees. This move may take one of two forms: a yaw (which preserves left and right relative to the nose of the unit on the map) or an "end-over," which reverses fore and aft and swaps left- and right-side arcs. Unlike a regular barrel roll, yawing and end-overs cost 2 Thrust Points to execute.

Rotational vectors (see p. 65) can be used with this rule.

Note that this rule can be used by any aerospace unit.

A WarShip facing toward Hexside A opts to carry out an end-over during its Movement Phase. Spending 2 Thrust Points, the unit reverses its front and rear facings (and so now faces Hexside D), and also swaps its left and right sides. If it chose to turn 1 hexside right, it would in fact turn 1 hexside left because of the reversed sides (potentially significant if the unit has damaged maneuvering thrusters). Had the WarShip chosen to yaw, it would have swapped front and rear facings in the same manner but retained its left and right orientation.

DOCKING

Two Large Craft can attempt to dock, linking airlocks (such as bay doors) or docking adapters. A docking attempt normally takes about 30 minutes (30 turns). This time can be increased as a result of docking collar damage, or voluntarily to improve the likelihood of a safe docking. A unit can dock in less time, to a minimum of 5 minutes, but such reductions increase the difficulty per the Docking Modifiers Table. These rules represent friendly units; enemy units attempting to dock/grapple a unit use the Infantry Vs. Infantry Actions rules (see p. 199, *TO*), or the Infantry Vs. Infantry Actions (Expanded) rules from this volume (see p. 36), as appropriate.

Units attempting to dock must be in the same space hex and moving at the same heading and velocity for the length of the maneuver. During the End Phase of the turn, once the time allocated for the docking maneuver has expired, make a Control Roll with the modifiers shown on the Docking Modifiers Table (see p. 68). A successful result indicates a successful docking. Failure indicates a mishap. The Docking Damage Table (see p. 68) lists the effects of the mishap based on the Margin of Failure (MoF).

Out-of-control units may not be the target of docking attempts (unless the docking units has a Naval Towing Adaptor; see p. 334, *TO*), nor may any hostile unit capable of expending thrust.

Docking Collar Locations: In most instances, exactly where an aerospace unit docks to another aerospace unit (the location of docking collars) can be left vague. However, certain rules exist (such as determining what arcs might not be able to fire when docked to another ship, or *Zero-G Ground Unit Combat*; see p. 119) that require a specific location for any docked units. In any scenario where the players think they will likely need to know the specific location of an aerospace unit's docking collar or bay doors, they can simply choose any location (except docking collars may not be placed on the aft side of JumpShips and WarShips).

If a KF drive unit has multiple docking collars, they should be spread as equally as possible around the unit. While players may wish to use a unit's Technical Readout illustration as a reference, they ultimately can place the docking collars wherever they choose, within the rules as described. For example, the *Star Lord*-class JumpShip mounts six docking collars. Looking at the illustration in *Technical Readout: 3057, Revised*, no docking collars are apparent, so that doesn't provide any help. A player might therefore simply assign one docking collar to each of the four available locations: Fore-Right, Fore-Left, Aft-Left and Aft-Right, leaving two docking collars to place in two different locations as he sees fit. The bay doors of units, particularly DropShips, tend to be located on the sides of units, and should be specified in the same fashion as docking collars.



Clan Nova Cat Aegis *and* Carrack *WarShips prepare to dock in order to transfer supplies.*

If a scenario begins with aerospace units docked to a parent aerospace unit, the parent unit's controlling player decides which docking collars or bay doors those units occupy. At any point during the game, if a unit is attempting to dock with another aerospace unit, the second unit's controlling player determines which docking collar or door is occupied if the docking is successful.

A friendly Large Craft will always dock where a docking collar is located, as determined above, in preference to bay doors. In the case of a DropShip docking with a JumpShip or WarShip, the DropShip may dock with its aft location or nose location wedded to the parent unit's docking collar, at the discretion of the controlling player. In the case of a JumpShip or WarShip docking with either a JumpShip or WarShip, both units assume an identical orientation and heading side by side (an umbilical tube is stretched between the two aerospace units' docking collars or bay doors). Any unit docking with a Space Station may use a docking collar or bay door of its choice. DropShips docking with DropShips may use their bay doors or docking collars as preferred after specifying their location as noted above.

Attacks From Docked Units: Neither docked unit can make any attacks using weapons in the same arc where the docking occurred (as determined above). The only exceptions are when different unit classifications are involved: specifically, DropShips to JumpShips/WarShips/Space Stations (JumpShips, Warships and Space Stations are considered the same classification for this rule). If a unit in a smaller classification is docked to a unit in a larger classification, the smaller unit still cannot use the weapons in the arc where the docking occurred, but the larger unit can use weapons in its arc. For example, a DropShip docked aft first to a JumpShip, WarShip or Space Station would be unable to fire its aft weapons, but the JumpShip/WarShip/Space Station would be able to fire all weapons in that arc. However, if WarShip A is docked along its right broadside and WarShip B is docked along its left broadside (same orientation and heading), neither would be able to use those broadsides, even though WarShip A would still be able to use its fore and aft right side arcs, while WarShip B would be able to use its fore and aft left side arcs.

Attacking a Docked Unit: See *Attacking a Docked/Grappled Unit* (see pp. 199, *TO*, and 36 of this volume, as appropriate) for rules on how to attack docked units.

Fighters and Small Craft: Fighters and Small Craft do not dock with their carrier units; instead, they use the launch/recovery rules presented on pages 84-86 of *Total Warfare*.

Undocking: Undocking requires no special rolls or rules and occurs during the End Phase of any turn when the player declares the unit is undocking; the unit can move normally on the following turn. However, a unit undocking from an out-of-control unit must make a Control Roll to avoid going out-of-control itself.

Expending Thrust: If any thrust is expended by a unit that has units docked to it, all such docked units must make a standard Control Roll, apply a +1 modifier for each point of thrust expended. A success means the ships remain docked, while a failure automatically undocks that unit, and destroys the docking collars on both units; as though both docking collars received critical hits.

DOCKING MODIFIERS TABLE

Condition	Modifier
Unit has critical damage to thruster	+1/box
Docking conducted during combat*	+2
Docking unit is JumpShip	+4
Docking unit is WarShip	+3
Docking unit is DropShip over 20,000 tons	+2
Docking unit is DropShip under 5,000 tons	–1
Per 15 minutes added to docking time	–1
Per 5 minutes subtracted from docking time	+1
Sensor damage**	+1/box
Avionics damage**	+1/box
Towing Adaptor on docking unit	–2
Target unit is Out of Control	+5***
Docking collar damaged	Double docking time

*This modifier applies to any docking attempts made within 10 hexes of units firing or being fired upon during the docking procedure.
**On either the docking unit or the target.
*** Impossible unless docking unit has Naval Tug Adaptor (see p. 334, *TO*)

DOCKING DAMAGE TABLE

Margin of Failure	Effect
0	Docking successful
1	Docking successful. Both docking collars take 1 box of damage.
2	Docking unsuccessful. The craft miss each other, but the pilot can attempt another docking after 10 turns
3	Docking unsuccessful. Both docking collars suffer damage; cross off 1 box. The pilot can attempt another docking after a delay of 10 turns.
4+	Docking unsuccessful. Apply standard-scale damage equal to (MoF – 3) x 10 to the location of both units where the docking collars chosen for the docking attempt are located. The pilot can attempt another docking after 10 turns.

During a battle, an Achilles*-class DropShip attempts to dock with its crippled twin to rescue the crew. The docking DropShip rushes the maneuver, opting to do it in 15 minutes rather than the usual 30 (and receiving a +3 modifier for doing so). After maneuvering into the same space hex with the same orientation, the docking unit's controlling player decides to align the DropShips; the docking DropShip (the one attempting the dock) is on the right, using its fore-left docking collar and the dockee DropShip (the one receiving the docking attempt) is on the left, using its fore-right docking collar.*

The target DropShip has damaged avionics (another +1 penalty) and combat is taking place within 10 hexes (another +2 modifier). In the unit's favor is its small size; massing 4,500 tons, the Achilles *qualifies for a –1 modifier. This gives a net modifier of +5 for the docking attempt, still a difficult proposition.*

With a base Piloting Skill of 5, the Modified Target Number for the roll is 10. The dice roll result is a 9, a Margin of Failure of 1. The Docking Damage Table shows that this results in a successful docking between the two units, though each suffers 1 box of docking collar damage. If either aerospace unit had taken damage points, the damage would have been applied to the fore-left of the docking DropShip and the fore-right of the dockee DropShip.

FLIGHT AND TRANSIT TIMES

The following rules provide guidelines that players can use to determine actual flight times around a planet, or between the planets within a solar system, while also offering expanded flight speed rules. While such information usually isn't needed outside of battle, when attempting to ferry reinforcements into a hot battle zone, timing could mean everything.

ATMOSPHERIC FLIGHT TIMES

Fixed Wing Support Vehicles and aerodyne aerospace units are capable of flight at high speeds using the High Altitude Movement Rules (see p. 79, *TW*). At that scale, Mach 1 is approximately one hex per turn. Aerospace units can climb above the atmosphere and reach extremely high speeds (see *Suborbital Flight Times*, p. 69), but atmospheric flight has its advantages—and is sometimes the only option, such as for conventional fighters and flight-capable support vehicles.

Non-propeller Fixed Wing Support Vehicles are limited to the Ground Row (approximately Mach 2 top speed; two hexes per turn) and Atmospheric Row 1 (approximately Mach 3 top speed; three hexes per turn) of the High-Altitude Map (see p. 79, *TW*). Non-propeller Fixed Wing Support Vehicles burn 2 fuel points per turn at their top speed at either altitude.

Long-range flights at such speeds are readily calculated once players (or gamemaster, if one is involved) establish the distance of the flight. The following table presents some examples of long range flight in atmospheres of standard Terran pressure (density). These assume travel at 2 hexes per turn (Ground Row) or 3 hexes per turn (Atmospheric Row 1) on the High-Altitude Map, and that the unit does not need to refuel during the flight (see p. 34). The longest distances provided are larger than a great circle flight around half of Terra's circumference, allowing for extended routes

and planets larger than Terra. These assume military flight profiles, where takeoff and landing times can be compressed to a few minutes (5 is assumed below) as the phenomenal acceleration of modern aircraft can be harnessed with little concern for passenger comfort.

Players should refer to page 54 of *Tactical Operations* in the case of atmospheres of alternate pressures (density) to determine the maximum speed at that altitude, and whether their aircraft can operate at that Altitude row.

While the atmosphere extends above Atmospheric Row 1 (35 km) for atmospheres of standard pressure (density), and higher speeds are possible at those altitudes for the aerospace units that can reach them, the units that can operate at those altitudes and speeds are also capable of reaching orbit, which is a milder environment than hypersonic, high altitude atmospheric flight. Therefore, these flight times only address relatively low altitude (35 km or less) supersonic flight.

Players wishing to calculate their own flight times can approximate 1 hex per turn on the High-Altitude map as 1000 kilometers per hour. Players should refer to the High-Altitude Movement rules (see p. 79, *TW*) to determine the required thrust and thus fuel consumption at those altitudes.

ATMOSPHERIC FLIGHT TIMES TABLE

Distance in Kilometers	Flight Times (by Altitude)* Ground Row	Atmospheric Row 1
500	18.9 minutes	14.3 minutes
1,000	32.8 minutes	23.5 minutes
2,000	60.6 minutes	42.0 minutes
5,000	2.4 hours	1.6 hours
10,000	4.7 hours	3.2 hours
20,000	9.3 hours	6.3 hours
30,000	14 hours	9.3 hours
40,000	18.6 hours	12.4 hours

* Takeoff and Landing are a military profile of 5 minutes.

SUBORBITAL FLIGHT TIMES

Aerospace units can make much more rapid long distance transits around planets by climbing above the atmosphere. The higher velocities call for longer acceleration and braking (aerobraking or rocket braking) than atmospheric flights, meaning that suborbital flights, at least those that do not end in vigorous and deconstructive lithobraking, are only worthwhile at longer ranges (several thousand kilometers or more).

Of course, spheroid Small Craft and DropShips, which cannot perform supersonic level atmospheric flight, generally must resort to this sort of flight for any journey longer than a few dozen kilometers.

The Suborbital and Orbital Flight Tables Table (at top right) present rough approximations of flight times. It assumes brief, powered ascents, followed by ballistic coasting and powered or aerodynamic braking to a normal landing. Constantly powered flights are very possible with the fusion-powered spacecraft of *BattleTech*, but such flights are a trickier matter to calculate. While these rules do not address such flights, players are encouraged to independently investigate the rewarding and interesting problem of suborbital and orbital flights at supra-orbital velocities under constantly varying acceleration vectors. The longer flights (over approximately 10,000 km) assume that the unit enters a low orbit over a Terra-sized planet until actively braking from orbit. Larger and smaller worlds than Terra may have longer orbital periods than Terra's low orbit, so this table is only appropriate for planets relatively close to Terra in size. Players can use the table as a guideline for generating flight times for planets significantly smaller or larger than Terra.

SUBORBITAL AND ORBITAL FLIGHT TIMES TABLE

Distance in Kilometers	Flight Time
1,500	15 minutes
2,000	18 minutes
2,500	20 minutes
5,000	30 minutes
10,000	50 minutes
20,000	90 minutes
30,000	120 minutes
40,000	140 minutes

INTERPLANETARY FLIGHT TIMES

The Interplanetary Flight Times Table (see p. 70) is a list of examples of interplanetary (even borderline interstellar) flights using the conventional continuous acceleration method (1G of acceleration to the midpoint of the journey, then 1G of braking to the destination). Generally, launch and landing in these flight profiles do not contribute significantly and so are not included on the table. Also, increased acceleration has negligible effects as well (see *System Transit*, p. 258), and flight paths are virtually straight lines except at the slowest beginning and end portions of the flights (or the shortest of the flights, those of a few thousand kilometers).

Players may wish to use the Terran System Navigation: A Closer Look graphic (see pp. 132–133) when reviewing this table to better understand the distances involved. While some of the information presented here is found on the Transit Times Table on that graphic, a much wider selection of distances is provided. Players can use the Interplanetary Flight Times Table (see p. 70) as a guideline for generating flight times for non-Terran solar systems—whether the planets are packed in tightly, or widely spaced—either based off of the sourcebook fiction for an already established system, or for players to make up from whole cloth.

INTERPLANETARY FLIGHT TIMES TABLE

1G TRANSIT TIMES

Distance in Kilometers	Astronomical Unit (AU)	Flight Time	Examples (Approximate)*
10,000	0.00007	0.6 hours	
20,000	0.00013	0.8 hours	Mars to Deimos
50,000	0.00033	1.3 hours	
100,000	0.00067	1.8 hours	
200,000	0.0013	2.5 hours	
500,000	0.0033	4.0 hours	Terra to Luna (400,000 km)
1,000,000	0.0067	5.6 hours	
2,000,000	0.013	8.0 hours	
5,000,000	0.033	12.6 hours	
10,000,000	0.067	17.8 hours	
20,000,000	0.13	1.0 days	
38,200,000	0.25	1.45 days	Terra to Venus (closest approach)
50,000,000	0.33	1.7 days	
56,000,000	0.37	1.75 days	Terra to Mars (closest approach)
100,000,000	0.67	2.3 days	
109,780,635	0.73	2.5 days	M5V Class-star Zenith/Nadir-to-Planet Transit
150,000,000	1.00	2.9 days	Terra to Mars (typical separation)
180,323,723	1.20	3.2 days	M0V Class-star Zenith/Nadir-to-Planet Transit
300,000,000	2.00	4.0 days	Terra to asteroid belt
310,447,382	2.07	4.1 days	K5V Class-star Zenith/Nadir-to-Planet Transit
549,230,550	3.66	5.5 days	K0V Class-star Zenith/Nadir-to-Planet Transit
750,000,000	5.00	6.4 days	Terra to Jupiter (average separation)
1,020,551,142	6.80	7.5 days	G5V Class-star Zenith/Nadir-to-Planet Transit
1,500,000,000	10.00	9.1 days	Terra to Sol's Standard Jump Points
1,989,583,571	13.26	10.4 days	G0V Class-star Zenith/Nadir-to-Planet Transit
3,000,000,000	20.00	12.8 days	Terra to Uranus (average separation)
4,082,204,567	27.21	15.0 days	F5V Class-star Zenith/Nadir-to-Planet Transit
7,500,000,000	50.00	20.3 days	Terra to Kuiper Belt
8,803,732,048	58.69	21.0days	F0V Class-star Zenith/Nadir-to-Planet Transit
15,000,000,000	100.00	28.6 days	
20,061,999,976	133.75	33.1 days	A5V Class-star Zenith/Nadir-to-Planet Transit
30,000,000,000	200.00	40.5 days	
48,582,783,961	323.89	51.6 days	A0V Class-star Zenith/Nadir-to-Planet Transit
75,000,000,000	500.00	64.0 days	
125,569,286,703	837.13	82.9 days	B5V Class-star Zenith/Nadir-to-Planet Transit
150,000,000,000	1,000.00	90.6 days	
300,000,000,000	2,000.00	128.0 days	
347,844,456,294	2,318.96	137.9 days	B0V Class-star Zenith/Nadir-to-Planet Transit
948,600,000,000	6,324.00	227.7 days	0.1 light-year, Inner Terran Oort Cloud

*Zenith/Nadir-to-Planet Transit assumes planet is located in the middle of the habitable zone; players can adjust flight times for planets further or closer away to a given star, using the rest of the information on the table as a guide (more information is found in the *Solar System Generation* rules in *Interstellar Operations*).

LANDING AND LIFTOFF (EXPANDED)

The following expands upon the Standard Rules for landing and liftoff of aerospace units (see p. 87, *TW*).

SYSTEMS STATUS

Standard rules assume aerospace units can instantly liftoff as soon as the controlling player desires. However, reality is far different, depending upon the readiness of the aerospace unit in question.

Two things govern how quickly aerospace units can liftoff: Preflight Check List and Engine Status.

Launching Fighters/Small Craft: If players are using these System Status rules, they also apply to launching fighters and Small Craft (see *Launching/Recovering Fighters/Small Craft*, p. 84, *TW*).

FAILED PREFLIGHT CHECK LIST TABLE

2D6 Die	Effect*
2-5	No Effect
6-7	+1 modifier to all Control Rolls
8-9	+2 modifier to all Control Rolls, +1 modifier to all Weapon Attack Rolls
10-11	Randomly determine a column and location on the appropriate aerospace Hit Location Table, and apply that critical damage.
12	Randomly determine a column and location twice on the appropriate aerospace unit Hit Location Table, and apply both critical damages.

*If an effect occurs, cargo is damaged as well (if there is cargo; Transport Bays are considered cargo in this instance). Roll 1D6, adding the final die roll result from the roll on the Failed Preflight Check List Table to determine the number of tons damaged; use the Cargo rules on page 239 of *Total Warfare* to determine the final outcome of that damage.

Preflight Check List

A Preflight Check List allows the pilot/crew to verify that all systems are in a flight-ready status. A Preflight Check List must occur before the engine status can be changed in anyway (see *Engine Status*, p. 72).

The time a Preflight Check List takes is based upon the size of the unit:

- **200 tons and under:** 45 ground turns (7.5 minutes)
- **201 tons to 5,000 tons:** 90 ground turns (15 minutes)
- **5,001 tons to 10,000 tons:** 180 ground turns (30 minutes)
- **10,000 tons and higher:** 270 ground turns (45 minutes)

The controlling player can attempt to liftoff earlier, but must make an automatic Control Roll. For each full 30 ground turns (5 minutes) under the time noted above, the controlling player must add a cumulative +1 modifier to the Control Roll. A success means the aerospace unit lifted off and no mishaps will occur due to short-changing the Preflight Check List.

A failure means that aerospace unit still lifted off successfully, but that something might occur during liftoff that will affect the unit's operations; this could a shifting of cargo that upsets flight balance, a critical systems failure and so on. After the failed Control Roll, roll 2D6 and compare the result with the Failed Preflight Check List Table (at left), adding a cumulative +1 modifier to the die roll result for each point of MoF from the Control Roll.

These effects are permanent until the aerospace unit lands and completes a new, successful Preflight Check List (for example the +1 modifier to all Control Rolls), or until the critical damage is repaired.

Delayed Liftoff: Once a Preflight Check List Control Roll has been made (and the engine status has reached Hot; see p. 72), the controlling player does not need to immediately liftoff the aerospace unit, designating the pilot/crew as "on standby". At any later time the aerospace unit may liftoff immediately. In this instance, if the Preflight Check List Control Roll was a failure, a roll on the Failed Preflight Check List Table is not made until the aerospace unit actually lifts off.

However, for every two hours (720 ground turns or 120 space turns) that a non-Large Craft (Large Craft have enough excess engineers, technicians and so on to maintain a steady standby) has not lifted off, apply a cumulative +1 modifier to all Control Rolls and Weapon Attacks for the pilot/crew. To reverse these effects, the player must designate the pilot/crew as 'resting,' meaning they cannot participate in any actions and to liftoff the aerospace unit a new Preflight Chest List must occur. One hour (360 ground turns) must pass to eliminate each +1 modifier. For example if the controlling player has an aerospace pilot on "stand by" after a Preflight Check List for three hours (creating a +3 modifier to all Control Rolls and Weapon Attacks), the aerospace pilot would need to be resting for three hours to eliminate all 3 modifiers.

Pilot/Crew On Standby: If an aerospace unit has kept a Hot Engine Status (see p. 72) since it landed and the player designates the pilot/crew as "on standby" at the time of landing, it can liftoff without a Preflight Check List and no Control Roll is required. However, for each hour (360 ground turns) that the pilot/crew is on standby on a non-Large Craft, apply the cumulative Control Roll and Weapon Attack modifiers as described under Delayed Liftoff, above.

Alternating Crews: In both the *Delayed Liftoff* and *Pilot/Crew On Standby* rules above, it is assumed that only a single pilot/crew is being used. If the controlling player has access to multiple pilot/crews, then he can rotate said crews and ignore any modifiers; effectively leaving the aerospace unit in standby indefinably.

Maintenance: A failed Preflight Check List Control Roll applies a cumulative +1 modifier for each point of MoF to the next Maintenance Check made for that aerospace unit (see *Maintenance*, p. 169). The next successful Maintenance Check, however, will clear any non-critical effects resulting from a failed Preflight Check List Control Roll—just as if the aerospace unit had landed and preformed a new successful Preflight Check as described above—even if the Maintenance Check is made in flight.

Moving Cargo: An aerospace unit cannot begin its preflight check until all cargo has been loaded or unloaded (see *Moving Cargo*, p. 41). If the aerospace unit is in the middle of loading or unloading and abruptly wishes to begin a Preflight Check List, the player simply stops the loading or unloading. If there is an item(s) that requires multiple turns (minutes) to load/unload and the controlling player is in the process of loading/unloading such an item(s), it must finish before the controlling player can designate that the loading/unloading process is done and the preflight check can begin.

Engine Status

A grounded aerospace unit mounting a fusion (or fission) engine can have its engines in three levels of readiness: Cold, Warm and Hot.

At the start of a scenario, the controlling player of any aerospace units should write down the Engine Status of the units in question. The players should agree on a formula for determining the engine status of each aerospace unit they control, based upon the type of scenario being played (if combat is expected, then engines might be Warm or even Hot, but if combat is not expected and the unit has been grounded for some time, it should likely be Cold). Players can also simply randomly determine the Engine Status for any aerospace units they control.

If an Engine Status is Cold or Warm, the Preflight Check List (see p. 71) must be completed before time can be spent, as noted below, to change the Engine Status.

- **Cold:** A Cold Status engine is completely shutdown, idling on auxiliary power or power drawn from the local DropPort (if grounded at such a location). To reach the point of liftoff from a Cold Status takes 90 ground turns (15 minutes) for a Large Craft, or 45 ground turns (7.5 minutes) for a Fighter or Small Craft. The controlling player can attempt to liftoff earlier, but must make an automatic Control Roll. For each full 6 turns (1 minute) under the 90 turns (15 minutes) for Large Craft and 45 turns (7.5 minutes) for fighters and Small Craft, the controlling player must add a cumulative +1 modifier to the Control Roll. A success means the aerospace unit ignited the engine without any mishap. A failure means the engine has been damaged. For each two points of MoF, the engine takes one box of critical damage; this means a single MoF does not damage the engine.
- **Warm:** A Warm Status engine has portions of its systems kept hot, allowing for the engines to be more quickly brought online. To reach the point of liftoff from a Warm Status takes 30 ground turns (5 minutes) for Large Craft or 15 ground turns (2.5 minutes) for fighters and Small Craft. As with a Cold Status, the controlling player may attempt to liftoff sooner, but must make a Control Roll under the same limitations noted above, and with the same results. Keeping an engine in Warm Status consumes 1/100th burn-day of fuel per day (or 1 point of fuel per day).
- **Hot:** A Hot Status engine has been kept idling and hot, meaning the unit can liftoff instantly, at the controlling player's discretion. However, keeping an engine in Hot Status consumes 1/20th burn-day of fuel per day (or 2 points of fuel per day).
- **Maintenance:** A failed Control Roll applies a cumulative +1 modifier for each point of MoF to the next Maintenance Check made for that aerospace unit (see *Maintenance*, p. 169).

From the Moving Cargo example on p. 43, Kristian has finished loading the cargo on his Colossus*-class DropShip. Now it's time for the Preflight Check List (he's been on the ground for some time and he didn't prep and so the crew is not on stand by). At 20,000 tons, it'll take 45 minutes for the Preflight Check List.*

However, he doesn't have that kind of time. He's just been notified by his spies that the bad guys finally know where his DropShip is at and an enemy DropShip just lifted off to intercept. He knows they're around 10,000 kilometers distant, and so checking the Suborbital and Orbital Flight Times Table (see p. 69), he knows he's got 50 minutes to get airborne before his opponent is going to start dropping ground troops on him and strafing him with aerospace fighter support. However, he was trying to horde fuel and so allowed his engine to reach a Cold Status. If he takes the safest route, that's 45 minutes for the Preflight Check List and 15 minutes for the Engine Status to move from Cold to Hot…10 minutes too late. He's not too keen on potentially damaging his engines, and so he decides to short change the Preflight Check List.

He wants to shave off 15 minutes, which will give him a 5 minute window to potentially escape. This incurs a +3 modifier to the Control Roll. With a Piloting Skill Rating of 4 for his crew, he's got to roll a 7 or better [4 (Piloting Skill Rating) +3 (+1 for each 5 minutes under the 45 minute mark = +3) = 7]. After the 30 minutes have transpired, he makes a Control Roll with a result of 4, giving him a MoF of 3. Ouch!

However, he doesn't make the roll on the Failed Preflight Check List Table yet as he's not lifted off. He's got to wait the 15 minutes for his Engine Status to go from Warm to Hot. As soon as he hits the 45 minute mark (a total of 78.6 minutes since Kristian began loading the DropShip in the first place), he immediately lifts off. Now that he's airborne, he rolls on the Failed Preflight Check List Table to determine if short changing preflight will do him any harm. He rolls 2D6 with a result of 5, applying the 3 MoF, giving him a final result of 8. Looking on the table he has to apply a +2 modifier to all Control Rolls and +1 modifier to all Weapon Attack Rolls; brutal if he the bad guys managed to catch up to him. Additionally, has to roll 1D6, adding that to the final die roll result of 8, giving him the amount of tons of cargo destroyed; he'll have to roll to determine if that's cargo or Transport Bays.

On his next Maintenance Check he'll have to also apply the 3 MoF, but hopefully it'll be a success and he'll be able to eliminate those effects.

VERTICAL LANDING AND LIFTOFF

Under Standard Rules, aerodyne DropShips and aerodyne Small Craft may not conduct vertical landing maneuvers in any type of atmosphere; such units can move in a vacuum in this fashion (see *Vacuum*, p. 54, *TO*). Aerodyne units are not designed to shunt away the backwash of their belly mounted transit drives, and can suffer catastrophic damage to their hulls and components if they attempt to land vertically in an atmosphere.

Under these advanced rules, aerodyne DropShips and aerodyne Small Craft may conduct a vertical landing (and the liftoff rules are modified accordingly), as a spheroid, in any atmospheric conditions (see *Atmospheric Pressure*, p. 54, *TO*) using all the standard rules for spheroids making such a maneuver (see p. 87, *TW*), with the following additional rules.

- In addition to all standard modifiers for a spheroid landing, apply an additional +1 for aerodyne DropShips and +2 for aerodyne Small Craft to the landing Control Roll

SIZE CLASS DAMAGE TABLE (ALL DAMAGE IN CAPITAL SCALE)

Unit Tonnage	Damage*
Zero to 500 tons	8 + 1D6
501 to 5,000 tons	14 + 2D6
5,001 to 10,000 tons	18 + 3D6
10,001 to 20,000 tons	24 + 4D6
20,001 to 35,000 tons	30 + 5D6

*Add 1D6 damage if the unit is conducting a vertical landing.

ATMOSPHERIC CONDITIONS TABLE

Atmospheric Pressure	Modifier
Vacuum	No Damage
Trace	Multiply Damage by .5
Thin	Multiply Damage by .75
Standard	No Modifier
High	No Modifier
Very High	Multiply Damage by 1.25
Water Take Off	Multiply Damage by 1.25

- A second Control Roll after the standard landing Control Roll is made (for maneuvering the unit through its own backwash), applying all the appropriate spheroid modifiers from the Landing Modifiers Table (see p. 86, TW) or Vertical Liftoff Modifiers Table (see p. 88, *TW*) as appropriate, and an additional +2 modifier. For every point of Margin of Failure, add 1D6 points of capital-scale damage to the final liftoff/landing damage. If the Control Roll succeeds, subtract 6 capital-scale damage from the final Takeoff Damage for every point of MoS.
- The unit suffers automatic damage based on its tonnage (see Size Class Damage Table, above). Modify this damage by the MoS or MoF of the Control Roll and then apply any Atmospheric Conditions modifiers to the final damage. Damage is split evenly between the Nose and Aft armor. If damage exceeds the damage threshold for that arc, roll for a critical hit as normal.
- For a liftoff, if the unit's landing gear is deployed it is destroyed during liftoff as though it took a critical hit; check off the Gear box on the record sheet.
- For a landing, the unit's landing gear is not deployed during the landing. If the unit survives the landing, it may not move under its own power (see *Taxiing*, p. 88, *TW*).

A heavily damaged Conquistador *is forced to land in a small cleared area of Avalon City. With insufficient runway space, it is forced to try a vertical landing. First it must make a standard spheroid landing Control Roll. The* Conquistador *is moving at a 2 velocity, so applies a +1 modifier for vertical landing at greater then 1 velocity. It has no damage to thrusters or landing gear so does not need to apply these modifiers. Because it is landing as a Spheroid, it does not apply the +2 modifier for destroyed nose armor or insufficient runway space. It still has thrust, but if it did not, it would apply a +8 modifier for landing as a Spheroid with no thrust. Finally as an Aerodyne DropShip, conducting a vertical landing, it applies a +1 modifier. Adding the modifiers to a base Piloting Skill Rating of 5, provides a final Modified Target Number of 7 [5 (Piloting Skill Rating) +1 (velocity over 1), +1 (Aerodyne DropShip) = 7].*

The controlling player makes a first successful Control Roll for the landing. However, the pilot must now determine how much damage the craft takes during landing. Once again the craft applies a +1 modifier for landing with a velocity of more than 1. It then applies the +2 Aerodyne DropShip modifier, for a final Modified Target Number of 8 [5 (Piloting Skill Rating) +1 (velocity over 1) +2 (Aerodyne DropShip) = 8]. Rolling a 6 provides a Margin of Failure of 2, so the DropShip will take an additional +2D6 damage on the Size Class Damage Table.

WATER LANDING AND LIFTOFF

For ease of play, in Standard Rules if an aerospace unit occupies a Depth 1 or deeper hex after landing it is considered automatically destroyed. However, units designed for the depths of space are able to deal with the effects of water with minimal lasting damage.

Any DropShip or Small Craft may land, ending its movement, in a water hex of Depth 1 or more (all hexes occupied by the landed DropShip must be water hexes of Depth 1 or more for these rules to be applicable). Fighters may not make such landings, unless equipped for an amphibious landing (see *Flotation Hull*, p. 302, *TO*).

Horizontal Landing

An aerodyne unit conducting a horizontal landing in which more than one quarter (round down) of the hexes of its landing strip are water hexes is considered to have crashed. Follow all standard rules for crashing (see p. 81, *TW*) with final damage multiplied by 10. This reflects the unit hitting the water and cart wheeling. Finally roll 1D6; on a result of 1-3 the units ends movement right side up, on result of 3-6 the unit is upside down. If the unit ends its movement upside down, it is considered destroyed for game play purposes. It must be salvaged before it can be used again.

Horizontal Liftoff (Conventional Fighter with Flotation Hull Only)

Only a conventional fighter equipped with an amphibious hull may attempt a horizontal liftoff. Such units follow all standard rules for liftoff (see p. 87, *TW*) and amphibious hulls (see p. 302, *TO*).

Vertical Landing

Spheroid and aerodyne units can land vertically with the following conditions and modifiers (effectively the unit hovers over the water and then cuts its drive when two elevations up, dropping the remaining distance to avoid plasma backwash):

- Make a Control Roll, as a spheroid, for landing using the standard rules (see p. 86, *TW*); aerodyne DropShips add an additional +1 modifier, while aerodyne Small Craft add an additional +2 modifier. If the Control Roll fails, add an additional 1D6 capital-scale damage for every point

of Margin of Failure. If the Control Roll succeeds, subtract 6 Capital-scale damage from the final Takeoff Damage for every point of MoS.
- Damage uses the standard rules for crashing (see p. 81, *TW)*, with the unit considered to have a velocity of 2.
- Aerodyne units are considered to have their landing gear retracted. A spheroid's gear is deployed to assist in stability after landing.

Vertical Liftoff

Spheroid and aerodyne units can attempt to liftoff vertically with the following conditions and modifiers (this operation is more complex, as the drives are submerged and must counter the water pressing in on it, much like the difference between holding a lit firecracker in an open hand and holding one in a closed hand):

- Make a Control Roll for Liftoff, per the standard Vertical Liftoff rules (see p. 88, *TW*), with an additional +1 modifier for aerodyne DropShips and an additional +2 modifier for aerodyne Small Craft.
- After applying the Size Class Damage and Atmospheric modifiers (see Size Class Damage and Atmospheric Conditions Tables, p. 73), apply the Water Landing Damage modifier for landing.
- The unit suffers automatic damage based on the size of the unit (see the Size Class Damage Table, p. 73). Modify this damage by the MoS or MoF of the Control Roll and then apply the Atmospheric Conditions modifier to the final rolled damage. Damage is split evenly between the Nose and Aft armor. If damage exceeds the damage threshold for that Arc, roll for a critical hit as normal.

Floating DropShips in Combat

A DropShip that is still operational after landing in water (it cannot move except to take off again) may participate in combat normally, with the following additional rules.

- Multiply their heat sinks by 1.1 for heat dissipation purposes, rounding down to the nearest whole point.
- Floating DropShips do not receive the –2 to-hit modifier for a grounded DropShip (the DropShip is resting 90% or more out of the water and bobbing around, which penalizes its weapons targeting).
- Any critical hits rolled on a spheroid's Aft or an aerodynes Nose and Aft received a +1 modifier to the die roll result (this reflects potential water damage when the armor is breached).
- If the Water Flow Planetary Condition is in use (see p. 52, *TO*), a floating or submerged DropShip will automatically be displaced as though it is a Naval Vehicle not expending MP to "hold position".

Partially Submerged Spheroid DropShips

During combat, a spheroid DropShip can choose to flood its cargo bays, lowering the hull 3 depths, so that it rises 7 levels above the surface of the water and is 3 depths below the surface of the water (this means that all hexes occupied by the DropShip must be a minimum of Depth 4). This operation must be declared in the End Phase of a turn. During the End Phase of the third turn after this declaration, the ship is considered flooded it cannot move except to take off again. A flooded DropShip may not take off, first having to reverse the flooding process; the player makes the announcement during the End Phase and then at the End Phase of the third turn after the declaration, the ship is empty of water.

In addition, the following rules apply.

- Due to the hasty nature of the flooding (as opposed to outside of combat, where the crew would be able to ensure everything in the cargo hold is properly sealed), roll 2D6 during the End Phase when the DropShip's cargo bays are considered fully submerged. On a result of 8+, some cargo is destroyed. For every point of MoF, roll 1D6. On a result of 1–3, general cargo suffers damage (if present; if no cargo is present, no damage is done). On a result of 4–6, units in bays (if present) are effected. First determine any units that are damaged. If any unit that is destroyed by submersion is present in the cargo hold, it is automatically destroyed. If there is more than one, randomly determine which is destroyed. Once all unit destruction has been determined, roll 2D6 for any remaining MoF and add that together to determine the tons of cargo destroyed. For example, if a player rolled an 11, resulting in a MoF of 3 and then rolled a unit in a bay and 2 cargo, he would then determine which unit was destroyed and then roll 2D6 twice, adding both rolls together and marking that much tonnage off as destroyed.
- Weapon attacks from non-submerged units re-roll all aft hits on the DropShip while it is flooded.
- Any friendly units with UMU MPs may mount or dismount through doors into flooded cargo bays of a DropShip. Use all the applicable rules for Mounting and Dismount (see pp. 89-91, *TW*), but apply an additional +1 modifier to all Piloting Skill Rolls
- An enemy unit with UMU MPs may attempt to mount or dismount through doors into a flooded cargo bays of a DropShip. Use all the applicable rules from *Boarding Actions (Non-Infantry*; see pp. 188-190, *TO*), but apply an additional +2 modifier to all Piloting Skill Rolls.
- As with standard underwater combat, if units are firing weapons inside a submerged cargo bay, only energy weapons or torpedoes can be fired.
- A fire can never occur in a submerged bay.

HIGH SPEED CLOSING ENGAGEMENTS

All the Standard and Advanced Aerospace Movement and Combat Rules assume low relative velocities, where both sides typically start the scenario under 20 velocity and do not move greatly faster than this. However, the distances of solar system travel and the almost limitless velocity of aerospace units means that engagements can occur where an eye blink could cover the entire span of a battle.

The High Speed Close Engagement rules represent combat where the opposing forces are operating at high velocities, typically found when transiting with in a system—such as to and from the system's jump point. The minimum speed for "High Speed" engagements is arbitrarily set as a relative speed that would take a unit through the maximum gun range of a target in 1 turn—about 101 hexes per turn with standard capital-scale weapons. These high speed closing engagements are a fast and usually brutal flurry of action and

reaction, which can often leave one Force an exploding cloud of debris and the other spinning out of control. The unforgiving and often inconclusive nature of these engagements is one of the reasons most combat occurs near a fixed location in the system—planetary orbit, jump points and so on.

Note: Even though these rules have been abstracted for ease of use, there is still a level of complexity, creating what some may consider significant math (particularly when trying to determine distances). Players should read these rules completely and understand the math requirements before deciding on their use.

At the same time, the lack of maps, even the need for miniatures and many of the more time-consuming standard rules, can make High Speed Closing Engagements a fast and fun 'pick up' game.

Terminology: High Speed Closing Engagements use the same definitions as *BattleForce* (see p. 212), with a Unit representing multiple Elements and an Element indicating a single ship, fighter or fighter squadron.

TYPES OF CLOSING ENGAGEMENTS

As an abstract combat system, High Speed Closing Engagements fall into two categories: Head On and Crossing.

Head On

Head on Engagements are the most common and involve the opposing Forces closing relatively directly at one another. Typically this will involve the attacker burning into the system, while the defender moves from the planet to engage in deep space, or may occur if the invader nearly reaches orbit before the defender responds with a head-on launch. These engagements also cover the case where a particularly fast Unit overtakes another from astern—the defenders generally have time to flip to face the attack from astern. Head On Engagements can also be used to simulate a 'drive by' encounter, where the attacker moves past a relatively stationary defender such as a recharging or orbital space station.

Crossing

Crossing Engagements represent one Force crossing the other when velocity vectors have more than 60 degrees of difference. This is most typically represented by a patrolling system defender moving to intercept an inbound attacker, who is burning to or from the planet. It may also occur in orbit when one group changes orbits to intercept another.

SET-UP

Closing Engagements are standalone aerospace scenarios. They do not require maps to play. Instead, players use the High Speed Closing Engagements Sheet (see the record sheets at the end of this book) and the individual record sheets for each Unit involved in the engagement.

Aerodyne Facing

For ease of game play, it is assumed any aerodyne DropShip or Small Craft in the engagement is maneuvering in 'Combat Mode' via their aft transit drive and not their belly mounted transit drive.

Decide Attacker and Defender

In many cases this will be self-explanatory. When this is not, players should randomly decide who is the Attacker and who is the Defender, for the purposes of playing the scenario.

Identify: Flotillas, Squadrons and Individual Ships

Closing Engagements allow players to maneuver entire fleets as single Units, or handle each ship and fighter individually, or combinations thereof. The difference is in the amount of record keeping, which is handled by the High Speed Closing Engagements Sheet. Each Unit (whether it is a flotilla, squadron or individual ship) that the players want to track is given a separate row on the record sheet. Players should clearly identify the Elements in each Unit.

Note that once declared at the start of a closing engagement, Units will only have one opportunity to rearrange into different groupings, which occurs during the Detection Phase. This is important because Maneuvers (see below) are declared for an entire Unit, and it may not be optimum, for example, to tie troop transports to the same maneuvers as their escorts.

Also note that fighters are not declared before the start of combat. They do not have the endurance for interplanetary transits and high-speed engagements on their own, and thus are carried by larger Elements until the Detection Phase. Small Craft may travel independently or wait to be launched during the Detection Phase. Any fighters or Small Craft carried by larger Elements must be specifically noted on the larger Element's Record Sheet. This is to prevent confusion later in the game as to which ship was carrying what.

Andrea and Bob are using these rules for the first time. Andrea is commanding a Force of 2 Fox*-class WarShips, 4* Achilles*-class DropShips, and 3* Stuka *fighter squadrons that are intercepting an invading Word of Blake fleet. (Two fighter squadrons are carried by the first* Fox*, while the third squadron is mounted on the second* Fox*, at the beginning of battle.) Andrea is feeling a bit lazy and decides to group*

PLAYER Andrea

Engagement Speed: _____ Angle of Attack: _____

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1	Flotilla-1(2 Fox, 2 Achilles)					
2	Heavy Squadron (2 Achilles)					

• HIGH SPEED CLOSING ENGAGEMENTS RECORD SHEET SAMPLE 1 (ANDREA) •

PLAYER Bob

Engagement Speed: _____ Angle of Attack: _____

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1	The Hit Squad (everything)					
2						

• HIGH SPEED CLOSING ENGAGEMENTS RECORD SHEET SAMPLE 1 (BOB) •

her main Force of WarShips and 2 Achilles *into "Flotilla 1." She then groups the two other* Achilles *into a quick-reaction Unit, which she decides to call a "Heavy Squadron." She has plans for her fighters, but it not time to declare them yet. She scribbles in the details on her High Speed Closing Engagements Sheet, as shown on page 75.*

Meanwhile, Andrea's opponent Bob is commanding a Word of Blake task Force with an Agamemnon*-class WarShip "donated" by his Free Worlds allies, three* Overlord*-class DropShips carrying his assault Elements, and is waiting to deploy his four* Striga *fighter squadrons (noted on the record sheet as three squadrons on the* Agamemnon*, and one squadron on the first* Overlord*). Bob wants to keep his Elements together, mistakenly thinking it will help, and is feeling very lazy, so he puts them into a single Unit, which he jokingly names "The Hit Squad." Bob fills out his High Speed Closing Engagements Sheet as shown above.*

Determining Engagement Speed

At the start of play, players must determine the closing speeds of the opposing sides. This can be determined by mutual agreement according to the scenario or using the Random Engagement Speed Table below.

Engagement Speeds are split into three classes: Slow, Medium and Fast.

"Slow" engagements are typical of conflicts near planets, where both sides, because they are either braking to a halt in preparation to land on or orbit the planet or are starting from a near-stop to intercept the invaders.

"Fast" engagements are very difficult to arrange because they are representative of jump point-to-planet transit velocities, where detection ranges of current sensor systems have a difficult time spotting other Units at adequate distances.

Finally, "Medium" speed engagements are "in between" velocities typical of long-range ambushes or short interplanetary intercepts.

In game terms, these three speeds are:

- Speed Class 1 (Slow): Approximate velocity of 101-1,000 hexes per turn.
- Speed Class 2 (Medium): Approximate velocity of 1,001-5,000 hexes per turn.
- Speed Class 3 (Fast): Approximate velocity of 5,001+ hexes per turn.

Andrea and Bob have already agreed that this interception will be occurring several hours from an unnamed Federated Suns planet, representing a surprise intercept of the Word of Blake fleet by a lurking AFFS aerospace Force, so they don't roll on the Random Speed Table. They've decided that Bob's fleet has several hours of braking left from his transit at 1 G (2 thrust points per turn, 60 turns per hour), which means his fleet will be moving at 360 hexes per turn when they meet. (At the end of the braking maneuver, his fleet would be almost motionless relative to the planet.) Andrea wants her fleet to have been burning at 2.5 Gs (5 thrust points) flat out to intercept the Blakists as far from Davion soil as possible, which means her fleet will be moving at 900 hexes per turn when it cross Bob's fleet. The total speed is 1,260 hexes per turn, which squeaks them into the "Medium" engagement speed class.

RANDOM ENGAGEMENT SPEED TABLE

2D6 Roll	Speed Class
2	Fast
3	Medium
4	Medium
5	Slow
6	Slow
7	Slow
8	Slow
9	Slow
10	Medium
11	Medium
12	Fast

Determine Angle of Attack

Next, players should determine which of the two types of Closing Engagements they will use for the scenario. They can choose by mutual agreement, or alternately roll on the Angle of Attack Table below.

Andrea and Bob have decided their scenario calls for a Head On Engagement, rather than rolling randomly. Bob's fleet is, after all, heading straight for the planet, and Andrea's fleet is departing straight away from the planet.

At this point, Bob and Andrea take a moment to update their Closing Engagements Record Sheets by filling in the Engagement Speed and Angle of Attack boxes in the top

ANGLE OF ATTACK TABLE

2D6 Roll	Angle of Attack (AoA)
2	Crossing
3	Crossing
4	Crossing
5	Head On
6	Head On
7	Head On
8	Head On
9	Head On
10	Head On
11	Crossing
12	Crossing

row with (because Andrea's feeling clever) "378km/s" and (because Bob wants to hurry to the ground combat) "Medium", and both mark "Head On."

SEQUENCE OF PLAY

The Sequence of Play of High Speed Closing Engagements is different from Standard or Advanced Aerospace Rules. A Closing Engagement consists of five phases. Not all phases—or their sub-phases—will be used in a given Closing Engagement scenario, but the order of play remains unchanged.

Note: All phases are considered an abstract time frame, which can represent milliseconds to hours. In Class 1 (Slow) and Class 2 (Medium) speed Engagements, the detection and tracking periods may occur over hours (because detection ranges are so large compared to the velocity), while combat in Class 3 (Fast) speed Engagements may be a matter of millisecond, computer-controlled weapons fire (the proverbial "eye blink" and you missed it).

1. Detection and Initial Maneuver Phase
- Determine Detection
- Launch and Redeploy Units
- Detection Maneuvering

2. Capital Missile Phase
- Capital Missile Maneuvers
- Capital Missile Attacks

3. Meeting Engagement Phase
- Meeting Engagement Maneuvers
- Meeting Engagement Weapons Fire
- Mine/Debris/Collisions
- Chaser Weapons Fire

4. End Phase
- Recover Detached Units

DETECTION AND INITIAL MANEUVER PHASE

The following steps occur, in the following order, during the Detection and Initial Maneuver Phase.

Determine Detection

In Class 1 (Slow) and Class 2 (Medium) speed Engagements, detection ranges (see *Advanced Sensors* , p. 117) are usually sufficient to give hours of warning and thus open all options for maneuver and engagements. Hard calculations of detection time generally entail a bit of basic physics of motions and are thus handled abstractly. Suffice to say that Class 1 (Slow) and Class 2 (Medium) speed Engagements do provide plenty of warning time.

For those players interested in calculating when a side is detected based on the detection ranges, note that one hex is 18km and one turn is 1 minute.

In Class 3 (Fast) speed Engagements, detection times can be much shorter. That is handled differently by limiting some options in fast encounters (as described later in these rules).

In Andrea's and Bob's scenario, they agreed that the normal observation satellites around their still-unnamed world had drive plume detectors and that the multitudes of satellites would guarantee detection at 3 million kilometers range. Working backward from the distance and Bob's acceleration (1G), they use the Transit Time calculations (see p. 259) to calculate that Bob would cross this distance in not quite 7 hours—Bob's fleet was thus detected 7 hours from the planet. (If they had not wanted to bother with this math, they could use an approximation of several hours given under "Determine Detection.") Andrea wanted to calculate closing speed based on a 7-hour response time, but Bob argued that it would take time to muster and launch all of Andrea's Forces, so she should only have a 1-hour response time. They split the difference with a 3-hour response time.

Launch And Redeploy Units

This is the last chance for fleets to re-arrange into Units, and the time to launch fighters. Later phases will occur so rapidly that there is no time to split-up and regroup Units.

Andrea is happy with her current Unit groupings, but Bob suddenly realizes that he has an opportunity to keep his ground troops out of harm's way. He regroups his Units into the Hit Squad Unit (the Agamemnon*, carrying 3 fighter squadrons) and The Troops Unit (the three* Overlords*, and 1 fighter squadrons).*

In Class 1 (Slow) and Class 2 (Medium) speed Engagements, there is always sufficient time to launch any fighters and/or Small Craft carried by larger Units. The short duration of these engagements mean that the fighters have sufficient fuel to maneuver independently when launched within about a half-hour of the combat.

In Class 3 (Fast) speed Engagements, detection ranges are not sufficient to guarantee enough warning time to launch fighters. The "attacker" (if one has been designated) is assumed to have had enough foreknowledge of the location of the defender to be able to deploy all their fighters even before entering detection range, but the "defender" has too little time. To represent this situation, the defender rolls on the Fighter and Small Craft Deployment Table (see p. 78) to determine how many fighters and Small Craft (as a percentage of all available to the defender) could be launched before the shooting starts.

At this step, if fighter squadrons are deployed, they must be noted onto their High Speed Closing Engagements Sheets.

FIGHTER AND SMALL CRAFT DEPLOYMENT TABLE

1D6 Roll	Percentage of Units Deployed*
1	15%
2	30%
3	45%
4	60%
5	75%
6	90%

*In all cases, round down to the nearest whole fighter and small craft.

In Bob's and Andrea's game, the Class 2 (medium) speed Engagement means both have a chance to launch all their fighters before combat. Since both do not want to see their fighters lost sitting in their hangars, both launch all fighters available. Andrea adds 1 squadron to "Flotilla-1" and deploys the other two squadrons' individual Elements she names "Light Squadrons 1 and 2." Bob adds one squadron to his new "Troops" Unit and the other 3 squadrons to his "Hit Squad."

Detection Maneuvering

Over the course of the Detection Phase, both sides will likely be maneuvering to either avoid or seek engagement. In game terms, there are 2 maneuvers in this phase: Intercept or Break Contact.

Each side determines whether each of their Units (each row on their High Speed Closing Engagements Sheet) will be making an Intercept or Break Contact maneuvers, and marks the maneuver on the record sheet. One Unit may only execute one maneuver in this phase.

If both sides are seeking conflict (both execute the Intercept maneuver), then this phase is ignored: move to the Capital Missile Phase (see p. 79). If both sides are seeking to avoid combat (both execute the Break Contact maneuver), then the entire combat scenario is over; no further phases are resolved.

In the case where one side executes the Break Contact maneuver and the other executes an Intercept maneuver, Control Rolls are made as described below. The side with the highest Margin of Success (MoS) successfully executes their maneuver. Ties go to the Unit executing an Intercept Maneuver.

Order is important when conducting these contested Maneuvers. Resolve Initiative normally with each side declaring Maneuvers in turn (as movement would be resolved normally in Standard or Advanced Aerospace Rules; see p. 75, *TW*, or p. 63). When declaring Maneuvers for Units, a player must declare Maneuvers for Units with WarShips first, then Units with DropShips second, and finally Units with only fighters and Small Craft.

Break Contact: A player executing this maneuver for a Unit is trying to have the Unit avoid combat. Success indicates that the Unit will *probably* avoid the combat phases. However, because later Maneuvers (in Class 1 (Slow) and Class 2 (Medium) speed Engagements) can give an attacker an opportunity to catch the fleeing Unit, this Maneuver should be recorded, and marked whether it was successfully executed or not. When making the Control Roll for this Maneuver, add a bonus equal to the Safe Thrust of the Element in the Unit with the lowest Safe Thrust. If this maneuver is successful in a Class 3 (Fast) speed Engagement, the Unit avoids all further combat with the avoided Units and does not need to go through combat with them.

Intercept: A player executing this maneuver for a Unit is trying to seek combat with another Unit. In addition to marking down the Intercept Maneuver on the record sheet, the Unit must indicate which Unit/Element it is attempting to Intercept. This will determine who can be engaged in combat later. Both sides make opposed Control Rolls, adding half of each Unit's Safe Thrust (round down) to the dice roll's Margin of Success (or subtract it from the Margin of Failure, to a minimum of 1). For Units with more than one thrust rating, use the lowest Element's thrust rating. A successful Intercept Maneuver indicates that the Unit has been able to enter combat range with the target.

Realizing what a couple of WarShips could do to his troop transports and invasion, Bob is now less sanguine about doing combat. Because Bob and Andrea have differing intentions, they roll Initiative. Andrea gets an Initiative of 10 and Bob rolls a 9. Bob declares his WarShip-containing Unit first, stating the Hit Squad will be Intercepting Andrea's Unit 1 "Flotilla-1." Andrea moves next, predictably declaring her WarShip-containing Flotilla-1 will be Intercepting the Bob's Unit 2, the Overlords. *Bob declares his Troops (Unit 2) will be Breaking Contact. Finally, Andrea looks over the situation and decides the whole Word of Blake invasion hinges on its ground troops, so she sets Unit 2, Heavy Squadron and then both Light Squadrons (Element 3 and 4) will be Intercepting the* Overlords *(Bob's Unit 2).*

With Maneuvers declared, it's time to see if the Maneuvers are successful. First, Bob's Hit Squad automatically Intercepts Andrea's Flotilla-1 since Flotilla-1 was not Breaking Contact. Bob notes the success on his record sheet for Hit Squad.

Next, Bob and Andrea roll to see if the Troops Break Contact with Flotilla-1. Despite the nimble fighters in the Troops Unit, Bob only gets a +1 for the Overlords' *Safe Thrust. With his Regular crews and the modifier, he rolls a 6, for a MoS of 2 [6 (die roll result) +1 (*Overlords' *Safe Thrust) = 7 – 5 (Piloting Skill Rating) = 2 (MoS)]. Flotilla-1 similarly gets a +1 for the sluggish* Foxes, *and with a Regular crew as well, Andrea is rolling against an identical Target Number, with an identical modifier. She rolls a 4, for a MoS of only 0 [4 (die roll result) +1 (*Foxes' *Safe Thrust) = 5 – 5 (Piloting Skill Rating) = 0 (MoS)]. The Troops Unit have avoided—for now—the Davion WarShips.*

Bob and Andrea roll again to see if her Heavy Squadron intercepts Bob's Troops (Unit 2). Bob has the same +1 modifier for the Overlords' *Safe Thrust and rolls a solid 8, for a MoS of 4 [8 (die roll result) +1 (*Overlords' *Safe Thrust) = 9 – 5 (Piloting Skill Rating) = 4 (MoS)]. However, the* Achilles *of the Heavy Squadron have an enormous +4 modifier for its 8 Safe Thrust and Andrea easily gets a 12 on the Control Roll after a die roll result of 8, for a MoS of 7 [8 (die roll result) +4 (*Achilles' *Safe Thrust) = 12 – 5 (Piloting Skill Rating) = 7 (MoS)]. The* Overlords *have been intercepted by the* Achilles. *Finally, Andrea and Bob roll for the Light Squadrons: 10 and 10, and then 9 and 14. With the tie, the nimble Light Squadron-1 is able to intercept the Troops, while Light Squadron-2 handily intercepts the* Overlords.

Their record sheets now look like the following at the end of the Detection Phase (see p. 79):

PLAYER Andrea

Engagement Speed: 378km/s (Med) Angle of Attack: Head-On

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1	Flotilla-1(2 Fox, 2 Achilles, 1 Stuka Squadron)	Intercept 1, failed				
2	Heavy Squadron (2 Achilles)	Intercept 2, Success				
3	Light Squadron-1 (6 Stukas)	Intercept 2, Success				
4	Light Squadron-2 (6 Stukas)	Intercept 2, Success				

• HIGH SPEED CLOSING ENGAGEMENTS RECORD SHEET SAMPLE 2 (ANDREA) •

PLAYER Bob

Engagement Speed: Medium Angle of Attack: Head-On

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1	The Hit Squad (Aggie, 3 ftr Squadrons)	Intercept 1, Success				
2	The Troops (3 Overlords, 1 ftr sqs.)	Break Contact				
3						

• HIGH SPEED CLOSING ENGAGEMENTS RECORD SHEET SAMPLE 2 (BOB) •

CAPITAL MISSILE PHASE

During this phase, players make attacks with the only weapons that have a substantial chance of hitting very distant targets in these high speed conditions: capital missiles. The missiles are released ahead of the fleet and use their unique independent maneuvering capabilities to execute bearings launch attacks on their foes. This is also the last chance to intercept a target that successfully Broke Contact in the Detection Phase.

Class 3 (Fast) Speed Engagements: In Class 3 (Fast) Speed Engagements, skip this phase and go directly to the Meeting Engagement (see p. 81).

Capital Missile Maneuvering

There are 4 Maneuvers you can select in this phase: Late Intercept, Turn Aside, Evasion, and Hold Steady. These are resolved in the same fashion as Maneuvers in the Detection Phase: roll Initiative, declare Maneuvers as before (WarShips first, fighters last), determine success by Opposed Control Rolls, with a limit of one Maneuver per Unit.

Late Intercept: This last ditch maneuver to intercept a fleeing target has one of three effects. It will either intercept a target that Broke Contact in the Detection Phase, cancel a Turn Aside Maneuver made in this phase, or give the Unit a new target. A Late Intercept is successful if the Control Roll has a MoS that equals or exceeds the Control Roll for the target Unit.

When intercepting a target that successfully Broke Contact in the Detection Phase, the Late Interception Maneuver faces a potentially stiff penalty. If the target declares that it is making an Evasion or Hold Steady Maneuver, the Late Interception receives a +1 modifier on its opposed Control Roll against the Broke Contact Unit. If the fleeing Unit makes a Turn Aside Maneuver, then it and the Late Interceptor Unit make opposed Control Rolls, but with the Late Interceptor receiving only a quarter of the lowest Element Safe Thrust (round down).

When intercepting a target that did not previously Break Contact but is making a Turn Aside Maneuver this phase, the Late Interception Maneuver allows a Unit to cancel the benefits of the Turn Aside Maneuver. In this case, the Late Interception Maneuver is made with a modifier equal to half Safe Thrust (round down) of the Element with the lowest Safe Thrust in the Unit. If the Turn Aside Unit is successful, then it has broken contact and can only be attacked by Capital Missiles but will avoid the Meeting Engagement Phase.

Finally, the Late Interception Maneuver can allow the Late Interceptor to move to a new target. If that target is Turning Aside this turn, resolve as above. If the target instead makes a Late Intercept of its own, then the interception is automatically successful.

Turn Aside: This Maneuver is either used to represent continued retreat by a Unit that successfully Broke Contact in the Detection Phase or to try and avoid the worst of direct combat in the Meeting Engagement Phase.

A Unit that is defending a successful Break Contact Maneuver by Turning Aside in this phase makes an opposed Control Roll with any of the Late Interceptors. The Unit Turning Aside makes a Control Roll with a modifier equal to half the Safe Thrust (round down) of the Element with the lowest Safe Thrust in the Unit, resolved as discussed under Late Interception (see above). If the Late Interceptor does not have a very large advantage in Safe Thrust, the Unit Turning Aside will generally be successful. If successful, the Unit Turning Aside will completely avoid Capital Missile combat and the later Meeting Engagement combat.

A Unit that did not successfully Break Contact in the Detection Phase makes an opposed Control Roll with any of the Late Interceptors. The Unit Turning Aside makes a Control Roll with a modifier equal to half the Safe Thrust (round down) of the Element with the lowest Safe Thrust in the Unit, resolved as discussed under Late Intercept (see above). If successful, the Unit Turning Aside will be harder to hit in the Meeting Engagement combat.

Hold Steady: The Unit does not contest Interception or Break Contact efforts, but instead holds steady to give its weapons a good shot on their target.

Evasion: Rather than trying to avoid combat completely, the Unit goes through evasive maneuvers while engaged in combat. The advantage is that the ship is harder to hit by capital missiles, but impairs the accuracy of its own missiles. Of course, if the Unit does not have any capital missiles but seeks combat in the Meeting Engagement Phase, then Evasion is an excellent Maneuver. Otherwise, the results are as noted under Hold Steady.

Launch Capital Missiles

Normal bearings-only capital missile launches are made, with the following details. Tele-operated and other modes of capital missile launches may not be used.

Facing: Depending upon the type of Maneuver, a Unit may need to declare a facing.

- A Unit that is Evading or Holding Steady may declare which arc it is presenting to Interceptors.
- A Unit that is making a Late Intercept Maneuver will have its nose arc aimed at its target, and thus will receive fire from its target on its nose arc.
- A Unit making a Late Intercept Maneuver on one Unit will be attacked from its side arc by another Unit intercepting it (Roll 1D6: 1-3 = right side, 4-6 = left side; then 1-3 = front side, 4-6 = aft side). Owing to the possibility of ships rolling around their thrust axis, Elements in the same Unit may be attacked on different sides by the same interceptor.
- A Unit that is continuing a successful Break Contact Maneuver but was caught by a Late Intercept Maneuver presents its stern arc to the Late Interceptor.
- A Unit that did not successfully Break Contact but made a successful Turn Aside Maneuver presents its stern sides to its attackers (Roll 1D6: 1-3 Aft Left, 4-6 Aft Right).
- In all cases, attacking Elements may fire from their primary facing arc and one adjacent arc. So a WarShip making a Late Intercept Maneuver may fire from its Nose and either of its Fore-side Arcs.

Attack Modifiers: Attack rolls are made with the following modifiers.

- +2 to-hit if the target successfully Broke Contact in the Detection Phase, but the attacker made a successful Late Intercept in the Capital Missile Phase
- Target cannot be attacked if it successfully Broke Contact and Turned Aside
- Normal angle of attack modifiers apply
- Normal Evasion maneuver modifiers apply

Attacks are made normally for bearings-only capital missile launches, selecting specific squadrons or Large Craft within Units.

Record Damage: Attacks are now resolved normally for bearings-only launches, applying damage to their declared targets. Unlike the upcoming phase, there is no debris generation to worry about—there is enough time to avoid debris generated from the Capital Missile Phase.

Andrea and Bob's Forces enter capital missile range. Bob realizes that his Forces are really poorly selected for this sort of warfare, because he has no capital missiles to launch. Andrea, however, has 16 Barracudas to launch. Additionally both players realize they need to maneuver for the upcoming Meeting Engagement Phase. They roll Initiative and this time Andrea rolls poorly, getting only a 5, while Bob gets a 9.

Going first, Andrea must move a WarShip-containing Unit before others. She declares Flotilla-1 will be making a Late Intercept on Bob's Overlord *Unit. It is Bob's turn, so he declares the fighter-and-WarShip Hit Squad will continue the Intercept of Flotilla-1, which is automatically successful. Andrea cuts to the chase by saying that the rest of her Units will still be making Late Intercepts on the* Overlords*, and Bob has his "Troops" make a Turn Aside maneuver to hopefully completely avoid the Davion WarShips and minimize contact with the other Davion Units.*

Bob and Andrea roll to see if her Unit 1, containing her WarShips, intercepts The Troops (Bob's Unit 2). With no thrust bonus this time, Andrea rolls a 7 on her Control Roll, for a final MoS of 2. Bob rolls a 7, but since he has a +1 bonus from his Safe Thrust he has a final result of 8 and MoS of 1. Bob's Overlords *manage to avoid capital missile fire and will avoid the Meeting Engagement with Andrea's WarShips.*

Bob is not so lucky elsewhere. Andrea's Heavy Squadron rolls a final result of 14 and her Light Squadrons roll final results of 11 and 13 for their Late Intercepts of The Troops Unit. Bob rolls final results of 8, 10, and 10 for his Turn Aside Maneuver—failing every time! The Troops are now committed to the capital missile engagement with Andrea's fighter and DropShip squadrons (fortunately, they have no capital missiles) and the upcoming Meeting Engagement.

If Bob's Overlords *had been caught by the* Foxes*, their capital missiles would have hit with unusual force due to the high speed nature of the engagement (see p.* 85*). On the other hand, they would have suffered a +2 to-hit modifier because of the successful Break Contact Maneuver last phase. Had both Units been able to fire missiles, the fleeing* Overlords *would've been taking "up the skirt" (rear arc) shots from the* Foxes*, while the* Overlords *would've been firing on the noses of the* Foxes*. Andrea instead fires her Capital Missiles at the incoming*

PLAYER Andrea

Engagement Speed: 378km/s (Med) Angle of Attack: Head-On

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1	Flotilla-1(2 Fox, 2 Achilles, 1 Stuka Squadron)	Intercept 1, failed	Intercept 2, failed	Intercepting 1		
2	Heavy Squadron (2 Achilles)	Intercept 2, Success	Intercept 2, Success	No cap missiles to fire		
3	Light Squadron-1 (6 Stukas)	Intercept 2, Success	Intercept 2, Success	No cap missiles to fire		
4	Light Squadron-2 (6 Stukas)	Intercept 2, Success	Intercept 2, Success	No cap missiles to fire		

• HIGH SPEED CLOSING ENGAGEMENTS RECORD SHEET SAMPLE 3 (ANDREA) •

PLAYER Bob

Engagement Speed: Medium Angle of Attack: Head-On

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1	The Hit Squad (Aggie, 3 ftr Squadrons)	Intercept 1, Success	Intercept 1, Success	No cap missiles to fire		
2	The Troops (3 Overlords, 1 ftr sqs.)	Break Contact	Turn Asside	No cap missiles to fire		
3						

• HIGH SPEED CLOSING ENGAGEMENTS RECORD SHEET SAMPLE 3 (BOB) •

Blakist Agamemnon, *but in a stunning series of bad rolls, manages to miss with all her missile bays.*

Bob's and Andrea's Game Sheets now look like the following at the end of the Capital Missile Phase (see above).

MEETING ENGAGEMENT PHASE

In this third Phase, the fleets reach gun range and pass each other. Generally, shots are withheld until range reaches a minimum to improve accuracy. This results in a low default Target Number modified by certain factors.

Meeting Engagement Maneuvering

Maneuvers are fundamentally different in this phase. Escape is no longer an option because time is so short; any Unit that was going to escape conflict did so in prior phases. (Note that it may be possible for a fleeing Unit to avoid Meeting Engagements with some foes but not others.) Instead, Maneuvers represent last-instant "tactical" moves to make attacks easier or more difficult. There are four Maneuvers available in this phase: Accelerating, Decelerating, Evasion, and Hold Steady.

Again, roll Initiative for the phase and declare Maneuvers as in the Detection Phase (see p. 77).

Accelerating: One way to avoid conflict is to shorten the opportunity for foes to target a ship. In this case, the Unit accelerates toward one declared enemy Unit, worsening that enemy's accuracy at the expense of its own accuracy. The Accelerating Unit may expend thrust points up to the Maximum Thrust of the Element with the lowest Maximum Thrust in the Unit. For every 3 full thrust points expended, the Accelerating Unit is harder to hit by a +1 to-hit modifier by the target enemy Unit, while it has a +1 to-hit modifier per 3 full thrust points to hit *any* enemy Unit.

Decelerating: The Unit burns hard to extend the engagement window with a selected enemy. Though this can help accuracy against that enemy significantly, it also means the Unit is flying butt-first toward the enemy with engines exposed to enemy fire and is easier to hit. The Decelerating Unit may expend thrust points up to the Maximum Thrust of the Element with the lowest Maximum Thrust in the Unit. For every 3 full thrust points expended, the Decelerating Unit has a –1 to-hit modifier against the targeted enemy Unit, but is easier to hit by a –1 to-hit modifier per 3 full thrust points by *any* enemy Unit.

Accelerating and Decelerating may cancel each other out or add together if two Units are Accelerating or Decelerating toward each other. After Accelerating or Decelerating modifiers are calculated, add them together. Modifiers for non-targeted Units do not change.

Hold Steady: The Unit takes no action to interfere with its accuracy and may pick the facing of its choosing. WarShips, for example, tend to turn broadside at moments like these to take an enemy under the combined firepower of its side and broadside arcs.

Evasion: The Unit begins maneuvering erratically. This makes it harder to hit, but will impair its own accuracy.

Andrea failed initiative again, rolling a 4 to Bob's 12. Since she has to declare her WarShip-containing Unit first and the Overlords *are out of its range, she accepts combat with the* Agamemnon *(which successfully Intercepted her in the last phase) and will Hold Steady. Bob declares his* Agamemnon *will Decelerate toward Flotilla-1, expending 6 thrust to gain a –2 to-hit modifier. Seeing an interesting opportunity for aerospace superiority, in a gamble, Andrea throws away two phases of dogged pursuit of the three tough* Overlords *and moves her Heavy Squadron and Light Squadrons to engage Bob's Hit Squad by Holding Steady—they never attempted to flee the Hit Squad, and thus may engage during the Meeting Engagement. Bob could have his Troops Unit Hold Steady to engage the Heavy Squadron or Light Squadrons, but thinks his Hit Squad will be able handle them alone, or at least survive the experience. He has his Troops Unit Evade, just to be sure. There are no Control Rolls to make in this Maneuvering Phase.*

Meeting Engagement Weapons Fire

Meeting engagement weapons fire is resolved using all the standard rules for combat (see pp. 234-251, *TW*, and pp. 94–121 of this book, as appropriate), with the following modifications:

Avoided Combat: In Class 1 (Slow) and Class 2 (Medium) speed Engagements, a Unit that successfully Broke Contact in the Detection Phase and Turned Aside in the Capital Missile Phase avoids Meeting Engagement Weapons Fire. This may apply to some Units and not others. (For example, Andrea's Unit 2, Heavy Squadron could engage Bob's Unit 2, Troops in the Meeting Engagement Phase, but Andrea's Flotilla-1 could not.) In Class 3 (Fast) speed Engagements, a Unit that successfully Broke Contact in the Detection Phase avoids the Meeting Engagement phase entirely.

Range: By default, a blanket range penalty of +4 is applied to both standard and capital-scale weapons, representing the random variations in range that may occur as ships fire their guns at slightly different instants. Variations to range are modeled with other abstract modifiers given below.

Capital Missiles: Standard capital missiles may be fired normally even if they were also fired in the Capital Missile Phase. Tele-operated missiles, which are limited by the reflexes of their human users, may not be used during Meeting Engagements.

Facing: Facing is usually declared at this point, but prior Maneuvers or the original Angle of Attack for the scenario may force another facing to be engaged.

- In Crossing Engagements, Accelerating or Decelerating Units will be presenting their sides (Roll 1D6: 1-3 = Right, 4-6 = Left) to hostile units. Roll once to determine which arc is presented to all opponents.
- In Head On engagements, Accelerating or Decelerating Units will be presenting their nose (Accelerating) or Stern (Decelerating) toward the target of the Maneuver. The Accelerating or Decelerating Unit will be able to select their nose/aft and one front side/aft side arc on the target of their Maneuver. Other hostile Units will hit the Accelerating/Decelerating Unit from the front sides (Accelerating [Roll 1D6]: 1-2 = Right, 3-4 = Nose, 5-6 = Left) or rear sides (Decelerating [Roll 1D6]: 1-2 = Right, 3-4 = Aft, 5-6 = Left). Roll separately to determine facing with respect to each hostile Unit.
- Units that successfully Turned Aside in the Capital Missile Phase but did not Break Contact in the Detection Phase present their aft sides to hostile Units (Roll 1D6): 1-2 = Right, 3-4 = Rear, 5-6 = Left. Roll separately for each hostile Unit.
- Units that chose to Hold Steady may declare any facing.
- Aerospace fighters, thanks to their extreme maneuverability, can bring their nose around to meet their target, in all conditions.

This facing is also important for the upcoming Chasing Weapons Exchange step, as there is no opportunity to change facing after the Meeting Engagement Weapons Fire subphase. A Meeting Engagement will be over in fractions of a second.

Attack Modifiers: In addition to appropriate standard combat modifiers, the following apply:

- +2 to-hit if the target Turned Aside in the Capital Missile Phase, but did not Break Contact in the Detection Phase
- Normal Modifiers for Evading
- +1 to-hit modifier per 3 full thrust points the target spends if the target is Accelerating toward the attacker
- +1 to-hit modifier per 3 full thrust points the attacker spends if the attacker is Accelerating toward the target
- –1 to-hit modifier per 3 full thrust points the target spends if the attacker is Decelerating toward the target
- –1 to-hit modifier per 3 full thrust points the target spends if the target is Decelerating
- –2 to-hit modifier with Capital-scale weapons that have Long or Extreme Range because their longer range gives them a better chance of catching the targets
- +1 to-hit modifier for Class 2 (Medium) speed Engagements
- +2 to-hit modifier for Class 3 (Fast) speed Engagements

Damage: Again, note the multiplication of damage from kinetic weapons based on speed class (*High Speed Damage,* see p. 85).

Mine Deployment: Mine fields (either standard mines or standard bombs released by fighter squadrons) and screen launchers may be deliberately targeted in High Speed Closing Engagements because the targets do not have a normal chance to avoid these threats. Minefields and screen launchers only be targeted at units when the attacker is making an Accelerating or Decelerating Maneuver toward the target, and the target is not Evading.

Attack Declaration: At this time, the Units take turns declaring attacks in the same order as they Maneuvered in this Phase. Minefield attacks, which are resolved in the next subphase, are also declared now.

Andrea speeds things along by declaring all her facing and shots first: everything on the Agamemnon. *If she kills that, the Hit Squad Unit's 3 squadrons of fighters might barely have 3 hours of fuel to reach orbit after this passing engagement, and it will be much easier to kill the fighters' last support ships—the* Overlords*—once the* Agamemnon *is gone. The* Foxes, *Holding*

PLAYER Andrea

Engagement Speed: 378km/s (Med) Angle of Attack: Head-On

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1	Flotilla-1(2 Fox, 2 Achilles, 1 Stuka Squadron)	Intercept 1, failed	Intercept 2, failed	Intercepting 1	Hold Steady	Unit 1: Agamemnon Fox 1 - RBS Fox 2 - RBS Other - Nose
2	Heavy Squadron (2 Achilles)	Intercept 2, Success	Intercept 2, Success	No cap missiles to fire	Hold Steady	Unit 1: Agamemnon Nose
3	Light Squadron-1 (6 Stukas)	Intercept 2, Success	Intercept 2, Success	No cap missiles to fire	Hold Steady	Unit 1: Agamemnon Nose
4	Light Squadron-2 (6 Stukas)	Intercept 2, Success	Intercept 2, Success	No cap missiles to fire	Hold Steady	Unit 1: Agamemnon Nose

• HIGH SPEED CLOSING ENGAGEMENTS RECORD SHEET SAMPLE 4 (ANDREA) •

PLAYER Bob

Engagement Speed: Medium Angle of Attack: Head-On

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1	The Hit Squad (Aggie, 3 ftr Squadrons)	Intercept 1, Success	Intercept 1, Success	No cap missiles to fire	Decelerate	Agg - Fox1, Fox2 Aft Sq 1 - F1 Nose S2/3 - F2 Nose
2	The Troops (3 Overlords, 1 ftr sqs.)	Break Contact	Turn Asside	No cap missiles to fire	Evasion	N/A
3						

• HIGH SPEED CLOSING ENGAGEMENTS RECORD SHEET SAMPLE 4 (BOB) •

Steady, will swing to present their overlapping broadside bays (Andrea picks the starboard side—right to you landlubbers) at the Agamemnon *while her other Units will face the heavy cruiser nose first. Andrea rolls to see from which angle her lighter Units are approaching Bob's Hit Squad Unit and gets a 1, 3, and 6: Aft Right, Aft, and Aft Left for the Heavy Squadron, Light Squadron-1, and Light Squadron-2, respectively. (How they managed to spread out around the stern of the Hit Squad when they were all off chasing one group of DropShips isn't clear to Andrea, but she chalks it up to the abstract nature of High Speed Engagements.)*

Bob, figuring he can deal with Andrea's DropShips and fighters later if he can get rid of the Foxes*, splits his* Agamemnon*'s firepower between the two* Foxes*. Because he decelerated his Hit Squad for a to-hit modifier the* Agamemnon *can only bring her Aft and one Aft-Side arc to bear, which Bob declares will fire its Aft and Aft Right weapons on the* Foxes*. All three squadrons of* Strigas *spin about at the last moment to fire their Nose mounted pulse lasers.*

They update their record sheets as shown above.

In the following exchange of fire, Andrea's Elements (all Holding Steady) have no modifiers for their own maneuvers. However, Bob's own Decelerating Maneuver has worked against him, giving all of Andrea's ships a –2 to-hit modifier. Unit 2, The Troops, is out of range for all of Andrea's ships and thus needn't have modifiers calculated against them. Bob's Unit 1 Agamemnon *is showing its rear to Andrea's Unit 1 WarShips and Unit 3, Light Squadron-1, so they have a +0 to-hit modifier for "attacks against aft." Heavy Squadron and Light Squadron-2 have a +2 to hit modifier for "attacks against side." The range modifier is +4; all of the available* Foxes' *capital weapons will have a –2 to-hit modifier because of their Long or Extreme ranges; their Barracudas will have another –2 to-hit modifier; their large pulse lasers will have a straight –2 to-hit modifier. Andrea's 3 squadrons of STU-D7* Stukas *do not have any particular weapon-related bonuses, but their massed missiles and autocannons will have a nice damage amplification from their velocity. And because this is a Class 2 (Medium) speed Engagement with a brief chance to shoot, all her Units apply a +1 to-hit modifier.*

Bob's WarShip Unit has its two targets facing broadside to his, so he gets a +2 to-hit modifier for "attacks against side." He also got a useful –2 to-hit modifier by Decelerating. Many—but not all—of the Agamemnon*'s aft and aft right capital-scale weapons have a –2 to-hit modifier for their range. And, like Andrea, he has a +4 to-hit modifier for the range and +1 to-hit modifier for Class 2 (Medium) speed. His fighters gain their own –2 to-hit modifier for their pulse lasers but have all the other modifiers that Bob's WarShip does.*

Neither player has any mines to deploy, though Bob reflects his fighters might've accomplished something if he'd loaded them with conventional bombs.

In the following exchange of fire, Bob is thrilled to see how a bay of NAC/20s can increase in damage from 60 points of capital-scale damage to 120. However, his capital-scale weapons do not finish off the Foxes*—he has too few in his aft and aft right arc and the miss with the single NAC/40 costs him his chance to kill* Fox *#1 (though, to be sure, it only survived because of its huge SI and lucky critical hit rolls). His fighter squadrons do a mix of damage, with two rolling poorly on their cluster hits. Added to his Capital Lasers not getting a damage bonus from speed, Bob is unable to finish either* Fox *(though they are both missing all armor on their Fore-sides). Bob notes that in the future, he should try a Hold Steady Maneuver and a broadside engagement, since he was unable to use most of his capital weaponry.*

Andrea is equally thrilled that she has two semi-functional Foxes*, but is more stoic about the predicted effects of concentrating firepower on the thin-skinned* Agamemnon*. Six Barracudas and 6 NAC/10s don't all hit, but at target numbers 3 (Barracudas) and 5 (NACs), only 2 NAC/10s missed for total of 112 damage. At similarly low numbers, the* Foxes*' Capital Lasers (without damage amplification) contribute to the demise of a ship over twice their mass. Andrea notes that for the future, she should use her screen launchers when target numbers are that low. They would've spared her ships some damage.*

The contribution of Andrea's fighters and DropShips are unneeded in this subphase; their declared target is dead.

Mine/Debris/Ramming Attacks

In High Speed Engagements, the risk of debris from the target you're approaching is much worse. Mines and even the "smoke" from screen launchers can be a threat. This step resolves the results of mines and debris passing through the enemy Formation.

Mine/Bomb/Screen Attacks: Mines and Screens may only hit targets if they were targeted in the Meeting Engagement Phase (see above for declaring a Mine attack). The Unit that deployed the mines makes a Control Roll with +6 modifier, modified by the to-hit penalty/bonus for the Accelerating, Decelerating or Evasion Maneuver that the attacking or target Unit generated during the Meeting Engagement Maneuvering subphase. A successful roll indicates that the attack hits.

Damage for Bombs are resolved per the standard rules (see p. 245, *TW*, or pp. 357-360, *TO*), while Screen Launchers base damage is half their normal damage as covered in the standard rules (see p. 251, *TW*). Rules for Space Mines can be found on page 366 of *Tactical Operations*.

In all cases, multiply damage as discussed on page 85.

Debris/Out of Control Collisions: If a Unit that was destroyed in the Meeting Engagement Weapons Fire subphase made an Accelerating or Decelerating Maneuver against a target that Held Steady or Accelerated/Decelerated toward the destroyed Unit, then there is a chance its debris will collide with the target. The target makes a Control Roll for each Large Craft or Squadron in the target Unit; if the die roll result is a 2, there is a collision. Damage is based on deliberate ramming (see p. 241, *TW*), but divide the tonnage by 10 (slow engagements), 5 (medium engagements), or 2 (fast engagements) to represent dispersion of the debris.

A Element that went out of control may collide under the same circumstances as a Debris collision, but it will only strike one target. When the target Unit is making Control Rolls, stop making the rolls if a 2 is rolled and apply damage to that Unit; if no 2 is rolled the collision was avoided. Start making the rolls with the Element in the opposing Unit with the highest tonnage and proceed down to the lightest. Damage is resolved as described in ramming (see below).

In both cases, if the target is a Fighter Squadron, there is a chance the fighters will evade the impact. On a successful Control Roll with a +4 modifier, the fighters 'thread the needle', and avoid all damage.

Ramming: Only deliberate ramming is a risk and is resolved (see p. 241, *TW*). Damage is multiplied as discussed on page 85, under High Speed Damage.

Andrea is elated she still has two WarShips and the rest of her aerospace Units, which she plans to use to hunt down the Blakist troop ships. Bob, however, points out that the High Speed Closing Engagement is not over. He had a Unit Decelerating toward Andrea's Flotilla-1, which was Holding Steady, and his Agamemnon *was destroyed, so there's a chance for debris collision with each Element and squadron in Flotilla-1. Andrea rolls for her* Foxes *and fighter squadron: 7, 2, 2. Against all odds (about 1 in 1,300), the debris cloud of the* Agamemnon *expanded enough to sweep through the space occupied by Andrea's* Fox*-2 and one of her* Stuka *Squadrons, blotting them from the sky in collisions with the force of nuclear explosions. Bob gleefully offers to calculate the damage, but at more than 1,200 hexes per turn and 820,000 tons of debris, Andrea doesn't need to apply points to know the* Agamemnon *has annihilated her* Fox *and 6* Stukas*.*

Chaser Weapons Fire

The instant after passing a target, a ship may fire weapons aimed in reverse toward its passing foes. The heading declared in Meeting Engagement Weapons Fire subphase is important now, because the arcs that can be fired now are the exact opposite arc of those fired in the Meeting Engagement Weapons Fire subphase. The same to-hit modifiers apply as in the Meeting Engagement Weapons Fire subphase, except that the to-hit number for firing on a different arc of the target may apply. (For example, previously facing a +0 to-hit modifier for firing into the *Agamemnon*'s stern, Andrea's surviving Flotilla-1 Elements would face a +2 to-hit modifier for firing on its nose.)

Kinetic weapons fired as chaser weapons suffer a damage penalty, and may not be useful at all, when fired as chasers (see p. 85).

Chaser Weapons fire is resolved with the same Initiative, Maneuvers, and targets that applied to the Meeting Engagement Weapons Fire. Units may not change targets from what was declared in the Meeting Engagement Weapons Fire subphase because there is no time to accomplish a retargeting.

Bob wonders again about his choice of Meeting Engagement Maneuvers. His Striga *A fighter squadrons are armed primarily with ballistic and missile weapons in their forward arcs, and no weapons in their Aft arcs, which happen to be the arcs able to fire on the passing Flotilla-1. Even had his fighters been facing the opposite direction at Class 2 (Medium) speeds, the* Strigas*' fighters are unable to catch the Flotilla-1 ships (specifically,* Fox*-1 and the deceased* Fox*-2) with their ballistic and missile weapons, leaving only the light-speed Heavy PPCs to flail at the passing Unit. The effect on the undamaged side armor of the* Fox*-1 is trivial. Since Andrea did not target the* Striga *squadrons, she cannot fire on them, but doesn't particularly care—with 1 Fox, 4* Achilles*, and 2* Stuka *Squadrons, the Blakist's DropShips are all hers.*

Heat and High Speed Engagements

For purposes of determining total heat, all weapons fire from the Meeting Engagement Weapons Fire and Chaser Weapons Fire are considered to have fired in the same turn. DropShips and WarShips may not exceed their total heat capacity with this combined fire (unless using the Advanced Heat rules; see p. 96).

END PHASE

Because the prior phases and subphases address damage resolution, the only significant actions left to players is to reclaim deployed fighters and consider if there is going to be another high-speed pass in their near future.

Reclaim Fighters

This is a relatively simple operation if the deployed fighters can still expect to return home to their original carrier Elements, or if their side still has enough empty fighter bays to "trap" all the fighters. However, if there is a shortage of bays, then excess fighters will have to be abandoned. The controlling player selects which fighters to save and which fighters from which only the pilots will be saved.

At the discretion of players more inclined toward roleplaying, a side with sufficient cargo tonnage may attempt to recover fighters through fighter bays into excess cargo bay tonnage (see p. 43)

Andrea's two surviving fighter squadrons easily return to Fox*-1 and do not need to land in the limited bays of the 4* Achilles *(which could hold 4 fighters each in their unused 2 fighter and 2 Small Craft bays). Bob's 4 surviving squadrons have more difficulty; the 3* Overlords *can only hold 6 fighters each. Since all 24 fighters are identical and undamaged, Bob just notes that 18 are recovered and, for future reference, all 24 pilots are recovered. At this point, though, he's getting worried about what happens when the Davion WarShip, 4* Achilles*, and 2 fighter squadrons come back after his Units.*

Close Encounters of the Second Kind

It is left as an exercise in players' physics knowledge of thrust ratings, distance, and time if they want to arrange a second High Speed Closing Engagement. While the first encounter might be arranged with random dice rolls, arranging the second is determined by the outcome of the first and the willingness of the players to bring their Forces back together again for battle.

Andrea is very interested in hunting down the dregs of Bob's Blakist Force, but Bob is more interested in landing his troops on the ground. The downside to a High Speed Closing Engagement is also obvious: after spending 3 hours accelerating at 2.5Gs, it will take Andrea 3 hours to halt (at least as a cohesive fleet; her Achilles *could stop sooner at 6Gs if she wanted to risk injuring or killing her crews), and more hours to return along the path they came. On the other hand, in 3 hours Bob's* Overlords *can continue braking 1G to drop their troops from a near-hover over the Davion planet. It is unlikely a second encounter could be arranged before the troops are deployed but, on the other hand, it is unlikely Bob's ground troops will have their DropShips for much longer after they deploy their troops.*

HIGH SPEED DAMAGE

For simplicity, Standard and even most Advanced Aerospace Rules combat ignores the influence of velocity on damage inflicted by non-energy weapons. However, High Speed Closing Engagements address this in part, recognizing the influence on damage for ballistic and missile weapons. Energy weapons (plasma, laser, PPC) are not affected by closing velocity.

Damage is affected as follows:

- In Class 1 (Slow) speed Engagements, the damage by missile, autocannon, and Gauss weaponry is multiplied by 1.5 (round up).
- In Class 2 (Medium) speed Engagements, the damage by missile, autocannon, and Gauss weaponry is doubled.
- In Class 3 (Fast) speed Engagements, the damage by missile, autocannon, and Gauss weaponry is quadrupled.
- In Class 1 (Slow) speed Chasing Weapons Fire, only autocannons and Gauss rifles can hit the passing targets and then only at half damage; missiles cannot hit.
- In Class 2 (Medium) and Class 3 (Fast) speed Chasing Weapons Fire, non-energy weapons cannot hit the passing targets.

Realistically, the damage might be increased by a great deal more than quadrupling (especially if anyone starts citing kinetic energy equations), but since it would be awkward for a battleship to be destroyed by a machine gun, a simple linear increase was selected for playability.

Players who want more realism from Units crossing each other at substantial percentages of light-speed (as might happen mid-transit in systems with large stars) are encouraged to resolve combat by dropping record sheets into cross-cut shredders simultaneously. The record sheet that is shredded the slowest wins the engagement though, obviously, it is destroyed in the process.

HYPERSPACE TRAVEL

JumpShips and WarShips can travel through hyperspace by means of the Kearny-Fuchida jump drive. Such drives allow these units to cross up to thirty light years almost instantaneously, but they require massive amounts of energy.

The time involved in moving to an appropriate location for making a jump, as well as charging the KF drive and calculating a jump generally fall outside of the scope of a standard scenario, often requiring hours, days or even weeks. As such, most of these rules fall outside of the scope of a standard scenario. Each of the headers below include a parenthetical noting whether the rules general apply outside or during a standard scenario game play. However, it is important to note that these are only guidelines. Depending upon the type and size of scenarios being played, players may find the lines blurred between what can and cannot occur during a scenario.

JUMP POINTS (OUTSIDE OF GAME PLAY)

To perform a jump safely, a jump-capable unit must be in an area free of significant gravitational influences (see p. 134). Such areas are known as either Proximity Points or Jump Points. The two most commonly used jump points are at the zenith and nadir of the gravity well, along the line that passes through the system's gravitational center and is perpendicular to the plane of the star system (generally above and below the poles of the star). These two points lie at the minimum safe jump distance from the main star and simplify navigational calculations. The jumping unit need not be stationary though calculating jump points for a moving unit is both more time consuming and difficult, as described under Jump Calculations (see p. 88).

The zenith and nadir are the most commonly used points, especially for civilian traffic, but are not the only options. A jump-capable unit can travel to any point in a star system that is at least as far away from the star as the distance listed on the Proximity Point Distance Table (see below). These jump points form a sphere around the star, although the gravitational fields of large planets might distort this.

A skillful navigator can use detailed information regarding a planetary system to calculate a jump point much closer to the intended destination than the zenith or nadir. This can drastically reduce transit times and fuel consumption, and will give defenders less time to react. Additional points, known as transient points and Lagrange points, may exist within a system where gravitational forces cancel each other out, such as points between a planet and a moon. These points are often used by raiders and smugglers, and are sometimes referred to as pirate points (see *Jump Points*, p. 134).

Transient points can be anywhere in a system and can come and go in seconds, though they are generally a sub-class of Lagrange points. This makes them difficult to use without significant advance planning. Some systems simply do not have useful transient points. Because of the very nature of transient points, they are not covered by the following rules. Players may wish to use transient points in certain scenarios; however, in such cases, the players sets transit distances and times.

PROXIMITY POINT DISTANCE TABLE

	Star Subtype									
Star Type	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
B	347.84	282.07	229.40	187.12	153.06	125.56	103.29	85.20	70.47	58.44
A	48.56	40.51	33.85	28.36	23.82	20.06	19.63	14.32	12.15	10.32
F	8.80	7.51	6.43	5.51	4.74	4.08	3.52	3.04	2.64	2.29
G	1.99	1.74	1.52	1.33	1.16	1.02	.90	.79	.70	.62
K	.55	.49	.43	.39	.34	.31	.28	.25	.22	.20
M	.18	.16	.15	.13	.12	.11	.10	.09	.08	.07

DISTANCE TO ZENITH/NADIR JUMP POINT TABLE

In days, assuming 1G acceleration and mid-point turnover

	Star Subtype									
Star Type	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
B	137.91	124.19	112.00	101.15	91.48	82.86	75.15	68.25	62.07	56.53
A	51.51	47.06	43.02	39.38	36.09	33.12	32.76	27.98	25.77	23.75
F	21.94	20.26	18.75	17.36	16.10	14.94	13.87	12.89	12.01	11.19
G	10.43	9.75	9.12	8.53	7.96	7.47	7.01	6.57	6.19	5.82
K	5.48	5.18	4.85	4.62	4.31	4.12	3.91	3.70	3.47	3.31
M	3.14	2.96	2.86	2.67	2.56	2.45	2.34	2.22	2.09	1.96

JUMP SAIL RECHARGING TABLE

Results in hours

Star Type	Star Subtype 0	1	2	3	4	5	6	7	8	9
M	201	202	203	204	205	206	207	208	209	210
K	191	192	193	194	195	196	197	198	199	200
G	181	182	183	184	185	186	187	188	189	190
F	171	172	173	174	175	176	177	178	179	180
A	161	162	163	164	165	166	167	168	169	170
B	151	152	153	154	155	156	157	158	159	160

Sol is a G2 star. To determine the distance from the star, cross-index the G row with the 2 column on the table. The result is 1.52. Because the figures given are in billions of kilometers, the distance from the star to the minimum standard jump point is 1.52 billion kilometers. A standard transit at 1G would take 9.12 days.

CHARGING THE DRIVE (OUTSIDE OF GAME PLAY)

Normally a JumpShip recharges its K-F drive with energy gathered via the massive collector sail, commonly known as the jump sail. The sail is fragile and great care is taken when deploying it. The controlling player should make a Control Roll. Success indicates the operation is successful, while failure causes damage to the Sail Integrity equal to the MoF.

Deployment of the sail normally takes 80 minutes, while furling requires twice that. For every 10 minutes (or fraction thereof) subtracted from this time, apply a +1 modifier to the Control Roll for the operation. Conversely, for every 10 minutes added to the furling or deployment, apply a –1 modifier to the Control Roll (to a minimum of 2; a result of 2 on the Control Roll is always a failure). For example, a furling operation would normally take 160 minutes. A crew decides to reduce this to 120 minutes. As this is 40 minutes less than normal, a +4 modifier is applied to the Crew Piloting Skill Rating for the Control Roll. Had the same crew opted to increase the time taken for the furling operation to 200 minutes, a –4 modifier would be applied to the Crew Piloting Skill Rating for the Control Roll, to a minimum of 2.

The time required for recharging the Kearny-Fuchida drive is governed by the star type of the current system. To determine the time, compare the star's type with its sub-type. This time is the minimum required and is increased by 10 percent for each point of Sail Integrity damage suffered by the jump sail.

Alternatively, JumpShips and WarShips can use their power plants to recharge the drive, or JumpShips and WarShips may also recharge their KF drives (and LF batteries) with energy stored in a recharge station's batteries, either beamed via microwave into the unit's sails or via a direct cable connection when docked.

Any attempts to recharge the K-F drive faster than 175 hours may result in drive damage. To determine if damage occurs, the controlling player should make a Control Roll, applying a modifier as indicated on the Quick-Charge Table (at right)

QUICK-CHARGE FAILURE TABLE

Die Roll (2D6 + MoF)	Result
2	40% charge lost
3	60% charge lost
4	80% charge lost
5	80% charge lost
6	100% charge lost
7	100% charge lost
8	100% charge lost; reduce K-F Drive Integrity by 1
9	100% charge lost; reduce K-F Drive Integrity by 2
10	100% charge lost; reduce K-F Drive Integrity by 3
11	100% charge lost; reduce K-F Drive Integrity by 4
12	100% charge lost; reduce K-F Drive Integrity by 5
13+	100% charge lost; K-F Drive destroyed

QUICK-CHARGE TABLE

Time Spent (Hours)	Control Roll Modifier
175+	No failure
150–174	+0
125–149	+1
100–124	+2
75–99	+3
25–74	+4
22–24	+5
20–21	+6
19	+7
18	+8
17	+9
16	+10
15	N/A

at the end of the elapsed time. If the roll is successful, the drive is fully charged. If the roll fails, roll 2D6, adding the MoF as a modifier to the roll, and consult the Quick-Charge Failure Table (see p. 87).

Each power plant-based charging attempt of the drive requires 10 burn-days of fuel (in addition to any fuel required for station keeping). At the end of the charging period (irrespective of success or failure) the controlling player makes another Control Roll applying a modifier as for the charging attempt (applying a +0 modifier for charging periods of 175 hours). For each point of MoS, reduce this fuel requirement by 0.5 burn-days (to a minimum of 4 burn days of fuel). For each point of MoF, increase the fuel consumed by 0.5 burn-days (with no upper limit).

Recharging from a space station occurs per the power-plant charging rules above (including the chance of failure) but does not cost the JumpShip or WarShip any fuel. Additionally, a direct cable connection (available only when docked) shortcuts a number of the fragile KF drive systems and thus the difficulty of any quick-charge attempts by such docked units applies a –2 modifier to the Control Roll, treating a final Modified Target Number of 2 or less as having no chance of failure. When docked to a space station the direct connection can only feed the energy from a single energy storage battery at a time.

It is impossible to charge a jump drive using more than one power source (sail, power plant, energy storage battery) at a time.

Lithium Fusion Batteries

Though expensive, lithium fusion batteries (see p. 323, *TO*) have become increasingly common since 3050. The system serves as an energy store, allowing the unit to make a second hyperspace jump. Charging the lithium fusion battery is handled like charging the K-F drive as described in Charging The Drive (see p. 87), and both can be charged simultaneously.

A unit with an LF battery in addition to its K-F core may use its jump sail to charge one device, and its power plant (or a direct cable connection to a recharge station) the other. If using its sail to charge from the local star, the unit may not use a microwave link to an energy storage battery at the same time (or vice versa), nor may it use one power source (sail, power plant, or direct connection to a station battery) to charge multiple drive systems. The exception to this is a station battery, where one charge can be sent via microwaves through the jump sail and a second charge via a direct cable connection.

If a failed quick-charge of an LF battery indicates a reduction in K-F Drive Integrity, the battery is destroyed instead.

The Invader*-class* Athena *arrives in a F7- class star system. Cross-referencing Star Type F with Subtype 7 indicates that it will take the* Athena *178 hours to recharge its KF drive via its jump sail. If the unit's controlling player were in a hurry he could shave almost 28 hours off this recharge time by using his power plant in lieu of the sail with minimal risk to the drive (and more if he is prepared to gamble on taking damage), albeit at the expense of fuel.*

The controlling player chooses to gamble, aiming to complete his recharging in 4 days (96 hours), applying a +3 modifier to the Control Roll for a final Modified Target Number of 7 (4 (Crew Piloting Skill Rating) + 3 (quick-charging in 96 hours) = 7. The player rolls a 9—a success—and completes his recharging operation. However, he must make a second roll to determine his fuel consumption (also against with a +3 modifier). This time he rolls a 10 (an MoS of 3), reducing his fuel consumption by 1.5 burn-days to 8.5 burn-days.

If there was a recharge station in the system, the Athena*'s controlling player could purchase a charge from the orbital facility. If he did so and recharged via the sail, the standard power plant rules apply save for fuel expenditure (i.e. if he charged in 96 hours, a Control Roll with a +3 modifier). However, had the controlling player docked to the station and used a direct cable connection for a 96-hour charge, the modifier would've only been a +1.*

JUMP CALCULATIONS (DURING GAME PLAY)

Once a jump-capable unit is at a jump point and has a fully charged drive, its crew may calculate an appropriate path between the current position and the destination, which must both be valid jump points.

In aerospace engagements, jump-capable units are assumed to *not* have a jump route calculated unless the scenario instructions state otherwise. To calculate a jump route, make a Control Roll with a +2 modifier, adding the modifiers from the Hyperspace Navigation Table. Compare the MoS to the relevant row in the Jump Calculation Table to determine the amount of time needed to calculate the jump.

If the roll succeeds, a jump point is calculated. If the roll fails, the time elapses without a point being calculated.

HYPERSPACE NAVIGATION TABLE

Situation	Modifier
Calculations made without navigation computer*	+2
Aerospace unit is moving predictably	+1
Aerospace unit is moving out-of-control	+3
Destination is nadir or zenith point	+0
Destination is non-standard point*	+4
Destination is transient point**	+4
Origin point is at nadir or zenith	0
Origin is non-standard (Lagrange) point	+2
Origin is transient point	+2

*Non-standard points cannot be calculated if a navigation computer is unavailable.

**Transient points require detailed charts of the destination system.

JUMP CALCULATION TABLE

Target is zenith or nadir
With computer: (2D6 – MoS) x 10 minutes
Without computer: (2D6 – MoS) hours
Target is non-standard jump point
With computer: (2D6 – MoS) x 30 minutes
Without computer: Impossible
Other
Unit is moving: Base time x 1.1

JUMP PROCESS (OUTSIDE OF GAME PLAY)

Once calculations are made, the coordinates are programmed into the K-F drive, a process which can take a varied number of minutes, depending upon the crew's skill and other random factors. Roll 2D6 to determine the base number of minutes. Then make a standard Control Roll, applying each MoF as one additional minute, or each MoS as one less minute (to a minimum of one minute).

There is no limit on the length of time a unit can wait at the zenith or nadir point, or at a non-standard point lying outside the minimum safe distance from the star (though for safety, calculations are usually re-checked every day). However, routes plotted to or from other non-standard and transient points are only valid for 20 minutes. Those calculated for a moving unit must be for a pre-determined position on its route. After that time, orbital movement makes the calculations useless and the process must begin again.

Once a unit is committed to a jump, it takes 10 minutes for the program to initialize. At this point warning klaxons sound to alert the crew, followed by additional warnings at 5 minutes, 1 minute, 30 seconds and 10 seconds before the jump.

The jump seems instantaneous, but it actually can take several minutes. The time varies depending on the distance traveled and the size of the JumpShip. The elapsed time in seconds is:

[light years traveled ÷ 2] x maximum number of DropShips the JumpShip can carry.

JumpShips always arrive stationary relative to the destination jump point.

Upon "arriving" at the intended destination, the navigator makes a second Control Roll. Apply the MoS from the original coordinate calculation as a bonus to the roll. Additionally, apply a +2 modifier for every point of damage sustained by the ship's K-F drive. Success indicates a "clean" jump, while failure indicates a miscalculation or erroneous data, causing damage or possibly destroying the ship. If the roll fails (i.e. a mis-jump occurs), apply (1D6 x 2 x MoF) points of capital-scale damage to each armor facing of the JumpShip and any DropShips carried. In addition, reduce the JumpShip's K-F Drive Integrity by the MoF. If the Drive Integrity is reduced to zero or lower, the K-F drive and the unit are destroyed, along with all DropShips carried.

MAKING A JUMP (DURING GAME PLAY)

In the Initiative Phase, JumpShips or WarShips that have coordinates plotted and have not expended thrust (changed velocity or facing) since plotting the jump can declare they are making a hyperspace jump; this means that a jump-capable aerospace unit with a Velocity greater than 0 can jump. However, regardless of the velocity of the jumping unit, it will always arrive at its destination hex with 0 Velocity with respect to the destination jump point; if needed, the player may determine the facing of the arriving JumpShip/WarShip.

The unit jumps in the End Phase of the following turn. The jump-capable unit is then removed from the mapsheet and cannot re-enter the scenario (see *Minimum Distance Jumps*, at right, for the exception).

Damage to Nearby Units

Opening a hole into hyperspace places great stress on nearby objects, potentially causing considerable damage to units close to the jumping unit. Additionally, attempting a jump while in close proximity to another K-F equipped aerospace unit is problematic because the two drive cores can interfere with each other fatally.

If two operational, jump-capable aerospace units occupy the same space hex or are in adjacent space hexes when one jumps, safety circuits will attempt to abort the jump (make a Control Roll; a success indicates an abort). If the jump does not abort, it still fails and the aerospace unit remains in place, but the jumping unit (and all other K-F equipped units in the same or adjacent hexes) loses a number of SI points equal to (MoF x 12D6). Additionally, each unit loses a number of points of K-F drive integrity equal to the MoF. It is not possible to abort an arriving jump-capable unit, and so if a JumpShip or WarShip appears in a hex containing another K-F equipped aerospace unit or a hex immediately adjacent to one, no Control Roll is made. Instead, any jump-capable aerospace units automatically take 7 points of damage to their K-F drive integrity and 7 x 2D6 damage to their Structural Integrity.

An aerospace unit that has had its K-F drive integrity reduced to 0 does not interfere with the jump process; you cannot shut down a K-F drive, so unless it or the aerospace unit where it is mounted is destroyed, it will always interfere in the jump process of a nearby unit.

All aerospace units in the same hex as a jumping unit (arriving or departing) or in an adjacent hex must make a Control Roll, except for any aerospace units docked to the jumping aerospace unit. A successful result means the unit avoids damage. Failure indicates it suffers (MoF x 2D6) points of capital-scale damage to each armor facing. Other than this, the jump proceeds normally and the jumping aerospace unit departs (or arrives).

Ground Units in Zero-G Operations: Any ground units landed on an aerospace unit that makes such a Control Roll must also roll to stay attached to the aerospace unit (see p. 120). If any ground units fail to stay attached to the aerospace unit, they automatically take the damage from the emergence wave (the MoF is their missed Control Roll to stay on the unit), translated into standard scale and applied in 5-point Damage Value groupings; treat it as an area effect weapon against infantry. If any ground units stay attached to the aerospace unit and the aerospace unit fails, the full damage applied to each facing of the ship is also applied to all attached ground units.

Minimum Distance Jumps: There is no minimum distance that a JumpShip/WarShip need jump; it can jump into the exact same hex from which it departed. However, if the destination hex is the origin hex or a hex adjacent to the origin hex, the result is almost certainly self-destruction. The jumping aerospace unit is subject to double the normal damage of a jump-capable unit within the effect of an arriving aerospace unit as it effectively "catches itself coming and going" with its own jump effects.

As previously noted, regardless of the velocity of the departing ship, it arrives with a Velocity of 0 with respect to the local jump point (the playing area). If the jump places the aerospace unit back onto the playing area, the controlling player determines facing.

For extremely short jumps (under 0.1 light-years), the duration of the jump is such that a jumping unit arrives in the same End Phase in which it is removed from the map for the jump.

PUNITIVE STRIKE

KEVIN KILLIANY



KABAH
SMOKE JAGUAR OCCUPATION ZONE
01 AUGUST 3057

Point Commander Lindz felt the familiar drag as her *Avar*'s down-swept wings bit into the thickening atmosphere. She tested her control surfaces reflexively, the minute movements barely affecting the thirty-five ton fighter's trajectory.

Chronometer check, position check: optimal.

Somewhere in the airless black above her, the *Drummond's Pride* began its braking burn. The Nova Cats were known to rely on their trusted hover drop. The Smoke Jaguars would be expecting the *Union-C* DropShip to descend within range of their weapons, then pause—a stationary target on its pillar of plasma as the Trinary of Fifteenth Garrison Cluster OmniMechs jumped free. The Smoke Jaguars were in for a surprise.

But it was a dangerous and fragile surprise. Her trothkin would be counting on Lindz to see them safely down.

Ahead of her the world's blue-white primary rose with preternatural speed as she overtook it. The unlimited sea beneath her wings lit from gunmetal grey to aquamarine as she arrowed out of the predawn darkness. An ocean, dotted with islands, and a table-flat continent beyond. Topography would not be a factor in the upcoming battle.

A glance through the canopy to her right confirmed Bicker was in position.

Strung out to her left—too far for her to confirm with naked eyes—were the other three Points of the abbreviated Star the Fifteenth Garrison Cluster had bid: two more *Avar*s, and a Point each of *Turk*s and *Batu*s. More than enough firepower to teach the Smoke Jaguars respect.

✦

***DROPSHIP* DRUMMOND'S PRIDE**

The racked row of pale dun eggs was not inspiring. Savil preferred the dignity of a hover drop deployment; the sense of control over one's destiny. In a hover drop a Warrior stood at the brink of an abyss, in the open door of a DropShip's bay and awaited the command to attack. When the order came, the Warrior stepped forward of his own will into the maelstrom of turbulence — keeping his OmniMech aligned as the thermal wash of the giant engines buffeted the war machine like a leaf in a gale — then chose when to fire his jump jets.

With the orbital drop, his beloved *Huntsman* would fall blindly from orbit in a thermal cocoon until air density sensors triggered explosive bolts to shatter the protecting egg. Then, then, he would fire his jump jets and his OmniMech would transform itself from helpless passenger to deadly machine of war. But Savil felt its glory was somehow lessened, its honor tainted by its ignominious delivery to the battlefield.

Raising one arm above his head to fit his broad shoulders through the narrow ingress, Savil lowered himself through the opening at the very top of the ceramic cocoon that enshrouded his *Huntsman.*

The sound of the technicians sealing the cocoon's final plug were carried faintly through his OmniMech's metal frame as he made final preparations. The cockpit's interior lights illuminated the ablative ceramic, creating the illusion of a pale yellow fog bank, silhouetting the knife point hanging from the slender chain above his view port. There was nothing remarkable about the seven centimeters of civilian-grade steel slightly twisted where it had snapped free of the blade—but it was a potent reminder.

Five years before, the 214th Jaguar Dragoons had abandoned Chupadero, leaving weeks before the Fifteenth Garrison Cluster's arrival without acknowledging Star Colonel Attwater's original *batchall*. Declaring by action that the Nova Cats were unworthy of honorable combat.

Not so the remnants of the Chupadero Armored Legion. They had met the Nova Cats with an unreasoning fury as ferocious as it was futile.

Savil had felt a moment's fear when the unarmored infantryman appeared at the *Huntsman*'s canopy, clinging impossibly in the midst of battle. He'd expected an adhesive charge slapped against the ferroglass. Instead, the man had jammed his knife into a framing seam, evidently bent on prying his way into the cockpit. The blade had snapped in his hand. Without a sound the soldier had tumbled from view.

The incident had lasted less than a breath, but to Savil it symbolized the entire Chupadero campaign.

It wasn't until the Fifteenth had secured the planet that they were able to assess the level of abuse the Smoke Jaguars had visited on the agrarian world during their occupation. The Nova Cat response, after the initial nausea, had been twofold: Their engineering caste had stepped in to facilitate rebuilding the ravaged world and their warriors had sought every opportunity to punish the Jaguars.

Ostensibly this raid against the 214th's supply depot was about acquiring needed munitions and tech. But there wasn't a warrior on either side who did not understand this was a matter of honor.

The angle of descent changed. The shift was subtle, but enough to swing the knife point against the canopy with a sharp click. As though it were eager to be free, ready to seek its vengeance in Jaguar blood.

✦

With contact still minutes away, Lindz brought her weapons online. On this mission all four *Avars* were arrayed for strafing ground targets: two large pulse lasers mounted in the nose, supported by two extended-range medium lasers in the wings. Star Colonel Attwater had been explicit: Avoid native assets and do as much damage to the Smoke Jaguars as possible.

A fiery point appeared at the top edge of the tactical display. Checking vectors, Lindz boosted her throttle a notch. She didn't bother telling Bicker to do the same. Her wingman could read numbers as well as she—or failing that, would notice her *Avar* pulling ahead. The assault

plan demanded that fighter cover arrive at the drop point just as the OmniMechs shed their shells for the final, most vulnerable stage of their descent.

Four blue sparks rose from an island ahead and to the north.

Lindz knew the Smoke Jaguars had bid six aerospace fighters to defend, choosing predictably to rely on BattleMechs. She watched for a long second, but no other craft rose to meet them.

"Lindz, lead Points three and four, suppress ground fire." Star Commander Suze's voice was crisp and unhurried in her headphones. "Points one and two, form on me. Engage fighters."

"Two fighters are missing," Lindz pointed out.

"Watch the sky."

Lindz nodded. Standard tactic would have a Point of *Kirghizes* or other heavy fighters lying doggo in low orbit, ready to pounce once the Nova Cat force was committed. It was possible they were already on a ballistic drop—engines cold as they fell toward the Nova Cats. No doubt the *Turks* and *Batus* would engage the stooping fighters long before they reached the *Avars*' level, but Lindz could hope one would fall low enough to engage. It would be little more than counting coup, there was little her small fighter could do against an opponent three times its mass, but to strike a *Kirghiz*—or even a *Scytha*—with her *Avar* would add honor to her name.

Lights streaked down through the sky ahead. Fifteen falling stars in close formation, their fiery trails pointing the way to their target. The ground beneath remained dark as the chronometer counted down the seconds to contact.

A data window popped into existence below the tactical display.

Based on apparent mass and flight characteristics, her targeting computer had decided the rising defenders were a Point each of *Sabutais* and *Sullas*. Specific weapons configurations would remain a mystery until battle was joined, but Lindz felt confident the unimaginative Jaguars had configured the medium-weight *Sullas* for air-to-air combat, intending them to cover the *Sabutais*. The heavy fighters were no doubt primed to attack a DropShip. Indeed, for long seconds they pulled up, climbing for altitude until, like dogs chasing a ground car, they realized the *Drummond's Pride* was forever beyond their grasp. Turning their climb into a long arc, the enemy altered vector to engage the Nova Cat aerospace fighters.

Focused on protecting her falling trothkin against threats from the ground, Lindz ignored the formidable Smoke Jaguar flight. The *Sabutais* and *Sullas* had little chance against Star Commander Suze and the *Batus* and *Turks* flying high guard.

"Fire up," Lindz urged the Smoke Jaguar MechWarriors holding the landing zone. "Give me a target."

Lindz told herself there was nothing dishonorable in standing with reactors banked and letting your enemy come to you, but the Smoke Jaguars' patience *felt* like *dezgra* deceit. If her computer could not find hard targets, she would have to rake the ground with random fire, relying on luck for hits.

Unless ... .

"Throttle back."

She didn't insult the intelligence of her pilots by explaining the command. They would arrive seconds late. Their MechWarriors would spill from their shells above a ready and undamaged enemy—enemy warriors who would have to choose between revealing themselves to the *Avars* or allowing the Nova Cat force to land unmolested.

Lindz hoped the Jaguars made the wrong choice.

✦

The knife point swung on its chain, ticking gently against the ferroglass view screen. Savil kept his interior lights on, preferring the ersatz fog bank to the darkness. Savil knew the outside of his ablative cocoon was glowing with white-hot heat as it streaked toward the ground, but inside his cockpit was cool.

A single tone in warning.

Savil gripped his yoke and joystick as the egg shattered. Eyes on the gauges, he directed his *Huntsman's* legs toward the ground and he stomped the control pedals. Hands and neurohelmet conspired to direct the blast of his jump jets against the deadly pull of gravity.

To his right Star Commander Proe's *Ebon Jaguar* fell, its powerful legs spread to accommodate the thick collars of disposable landing jets.

The *Huntsman*'s active probe came alive, the targeting computer identifying a half dozen OmniMechs below as the defenders brought their fusion reactors up to full power. *Stormcrows*, of course, but also a brace of *Warhawks* and an *Ebon Jaguar* to match his Star commander's.

With a few quick keystrokes, Savil sent his superior array's data to Proe, acknowledging his leader's right to first choice of targets.

Evidently not trusting the single-use jump packs to hold his OmniMech steady against the recoil of the massive ultra AC/20, Proe lashed out with all five lasers at extreme range, targeting the closest *Warhawk*.

Savil targeted the lone *Ebon Jaguar* and unleashed his own extended-range large lasers. A storage shed disappeared in a ball of flame as whatever it had held exploded, but the second beam gouged a deep gash along the length his target's autocannon housing.

The Smoke Jaguar MechWarrior answered with his own extended-range large lasers. Both beams boiled through empty air, their targeting systems scrambled by the *Huntsman*'s electronic countermeasures.

Savil lined all four extended-range medium lasers on his opponent. Three seconds to optimum range. Two—

Silver flashed in the noonday sun. Savil's startled mind registered a winged shape streaking between him and the ground. Then he was thrown against his harness, fighting for control as the OmniMech's gyro failed against the fighter's turbulence.

✦

Blue-white flash.

Stomping her left pedal, Lindz wrenched the yoke over, throwing her fighter into a tight roll.

An orange flare filled her cockpit, disappearing instantly.

Focused on the Jaguar BattleMechs coming alive across her targeting array, it took Lindz a startled second to process the images. The bolt of a particle projection cannon and the remains of Bicker's *Avar* a fading fireball behind her.

Weapons alarms hooted.

A fighter directly ahead. Her targeting array gave good tone, but Lindz didn't dare fire. There were fifteen Nova Cat MechWarriors suspended in the air beyond the oncoming enemy.

Knowing only the PPC's recycle time had saved her thus far, Lindz shoved the yoke forward. Giving up air was the wrong thing to do in a dogfight, but stupid was her only option.

The bolt of eye-searing blue savaged the air where she should have been; then the fighter was past her.

Ignoring an enemy that would take long seconds to circle back, Lindz chose a Smoke Jaguar *Warhawk* and narrowed her sensors' focus but stayed her trigger finger. Air support was not melee; she could not violate the code of *zellbrigen* by strafing an opponent actively engaged in a duel. A heartbeat later, her sensors reported the MechWarrior was still scanning wide, with

no adversary selected. Satisfied, she unleashed all four lasers. The *Warhawk*'s long range launcher disappeared in a fireball of exploding missiles.

Distracted from the jumping Nova Cats, the eighty-five-ton OmniMech pivoted to meet the unexpected assault. Or tried to—the machine was much too ponderous to respond to an enemy flickering past at six hundred kilometers an hour.

Lindz climbed, ignoring the return fire flaring harmlessly through where she had been.

High above, a single Jaguar *Sabutai* and the pair of *Sulla*s fought futilely to escape the Nova Cat *Batu*s and *Turk*s. Beneath her, twelve of the fifteen OmniMechs had reached the ground and were engaging a roughly equal number of defenders. At her level ...

An aerospace fighter was arrowing toward her from the south-southeast at seven hundred kilometers per hour. The Smoke Jaguar signaled intent with a focused double pulse of his targeting array. With her charges safely grounded, Lindz was free to accept the duel. Grinning she brought her *Avar* around to engage.

A data window popped open at the edge of her heads-up display. She was facing a *Chaeronea*. Ten tons lighter than her *Avar*, it was practically unarmored. But it was faster—and armed with an extended-range particle projection cannon that could deliver devastating damage from beyond the reach of her pulse lasers.

"Lindz..."

"Go, Daran."

"I am engaging second Smoke Jaguar," the Point Four wingman reported. "Vost lost his engine but landed safely There is a strip west of the depot."

Lindz nodded. A simple strip—that was where the hyper-fast *Chaeronea*s had waited until the Nova Cat pilots were committed before attacking from the one direction they would not be watching. Through the OmniMechs they were protecting.

"He will be remembered," she said aloud.

"Remembered hell, I will be picked up," Vost broke in. "I can taxi and shoot until extracted."

Lindz doubted that, but said nothing. Twelve seconds from contact, she swung her fighter in a random series of shallow arcs, teasing her opponent into responding; assessing his skill.

"They are made of paper," Daran said. "One solid hit and they come apart."

Lindz did not acknowledge the useless advice.

Kicking to full thrust, she attacked.

✦

Savil forgave the Jaguar piloting the wounded *Dire Wolf* as explosions cascaded up the side of his *Huntsman*. He'd landed far from the *Ebon Jaguar* and there was nothing to indicate he was already engaged in a duel.

Savil shuffled left, then jumped right, using his *Huntsman*'s greater agility to avoid a killing blow. His speed and the Jaguar's lack of imagination were working to his advantage, allowing him to close.

The *Dire Wolf*'s pilot was evidently used to standing foursquare and pounding his enemies to scrap—he hadn't so much as shifted his leg position since opening fire. Instead he methodically alternated between his twin autocannons and his four ER large lasers, using neither with particular accuracy.

Firing both ER large lasers, Savil dashed forward, aiming his fifty-ton *Huntsman* like a battering ram. As expected, the Jaguar froze—momentarily confused by the suicidal tactic—and was a heartbeat late firing the hundred-ton OmniMech's massive mix of lasers and cannon.

One hundred and twenty meters in front of his enemy, Savil stomped his jump pedals. The *Huntsman* leapt into the air—cleanly over the deadly barrage of the Smoke Jaguar's belated alpha strike.

Angling the jets, Savil rotated as he passed over his opponent's head. The legs of his damaged machine nearly buckled as he came down behind the *Dire Wolf*, but he managed to stay upright. Ignoring the damage alarms, Savil unleashed his own alpha strike. Heat sucked the air from his lungs as all seven lasers poured destruction into the thinly armored back of his enemy at near-contact range.

The huge machine pivoted—too slowly. Savil dashed right, keeping behind the behemoth. A second alpha strike would force his *Huntsman* into thermal shutdown, but there might be enough margin—

Four extended-range medium lasers tore through the gaping armor. Savil expected an explosion of stored missiles—instead the *Dire Wolf* staggered, nearly toppling as its pilot threw a leg wide in a desperate attempt to keep it upright.

Savil shuffled right, staying away from the unstable Jaguar's guns as his OmniMech cooled. His enemy had not yet fallen, but with the gyro failing it was only a matter of time.

✦

In space the Smoke Jaguar could have rotated his *Chaeronea* on a short axis—keeping the extended-range particle projection cannon focused on Lindz as she flared up and wide. But the thick soup of air limited his options. If he wanted to keep his straight-ahead weapon bearing, he had to turn, pulling up as she rose.

Lindz jigged her yoke right, again, then left—complicating the firing solution without affecting her overall arc.

As long as air flowed across wings, physics dictated the Jaguar had to give up speed to stay inside her arc. If he let her turn in, she'd have a clear shot at his unarmored hide. True, he could break off and outrun her—but at this range he'd be under her guns for long seconds before he pulled away, and all the *Avar* needed was one clean hit to bring him down.

Of course, a clean hit from the massive ER-PPC could bring *her* down, if he placed it well enough. Worth remembering.

Lindz flattened her arc, turning her wide flare into a climb. A stupid move, but she'd proven once today that stupidity worked against this Jaguar pilot.

Shedding velocity, the *Chaeronea* followed her upward. Lindz rocked her craft, doing her best impression of a pilot in panic as she lured the Jaguar closer.

Target lock.

Pulling the yoke to her gut, Lindz stood her *Avar* in its tail. Lock tone faded as the craft shuddered, and dropped. Hands off the throttle, she let gravity pull her fighter down. She jacked the ailerons and kicked the rudder hard. Nose up, the fighter fluttered as it fell.

Unable to lock on the random motion, the Jaguar fired manually. The blinding blue bolt of the ER-PPC crackled uselessly through empty air.

Lindz released the yoke as the *Chaeronea* flashed past—bringing elevators and ailerons true—and shoved the throttle forward.

The Jaguar pilot boosted to maximum acceleration, easily pulling away from the *Avar*. He was out of range of her medium lasers by the time Lindz regained control. But still within reach of her pulse lasers.

The fireball was invisible from the ground below.



The Black Lion-*class* Rays of Enlightenment *WarShip maneuvers past an asteroid to rejoin the battle.*

Combat involving advanced aerospace units follows the rules presented in the *Aerospace Units* section of *Total Warfare* (*TW*) closely—only a few additional rules apply to advanced aerospace units with regard to firing arcs and hit locations. Most of the rules presented here are intended to increase the range of options available in aerospace combat and the level of detail and realism that may be achieved.

ADVANCED AEROSPACE UNITS COMBAT

The following rules are in addition to the rules presented in the *Aerospace Units* section of *Total Warfare*. Unless specifically stated otherwise, these units follow all those rules.

FIRING ARCS

The following firing arcs apply to advanced-rules aerospace units:

JumpShips and Space Stations: JumpShips and Space Stations use the Spheroid Firing Arcs Diagram (see p. 235, *TW*).

WarShips: WarShips use the WarShip Firing Arcs Diagram (see p. 95).

Satellites: Satellites use the Spheroid Firing Arcs Diagram (see p. 235, *TW*)

HIT LOCATION

While advanced-rules aerospace units assign damage in the same way as standard aerospace units, they use their own Hit Location Table.

Satellites: Satellites use the Fighters section of the Aerospace Units Hit Location Table (see p. 237, *TW*) to determine hit locations.

CRITICAL HIT EFFECTS

The following critical hit effects are in addition to those starting on page 239 of *Total Warfare*.

Grav Deck: A randomly determined grav deck is rendered inoperative. This has no tactical game effect.

K-F Drive: Part of the JumpShip's or WarShip's K-F drive is damaged. Reduce the K-F Drive Integrity by 1 point per critical hit. If the Drive Integrity is reduced to 0, the unit cannot jump.

COLLISIONS AND RAMMING

The Ramming Attacks Table (see p. 96) is taken from page 241 of *Total Warfare* and expanded to include appropriate modifiers for advanced aerospace units as well as allowing for the ramming of ground targets.

Squadrons may not make (or be the target of) ramming attacks.

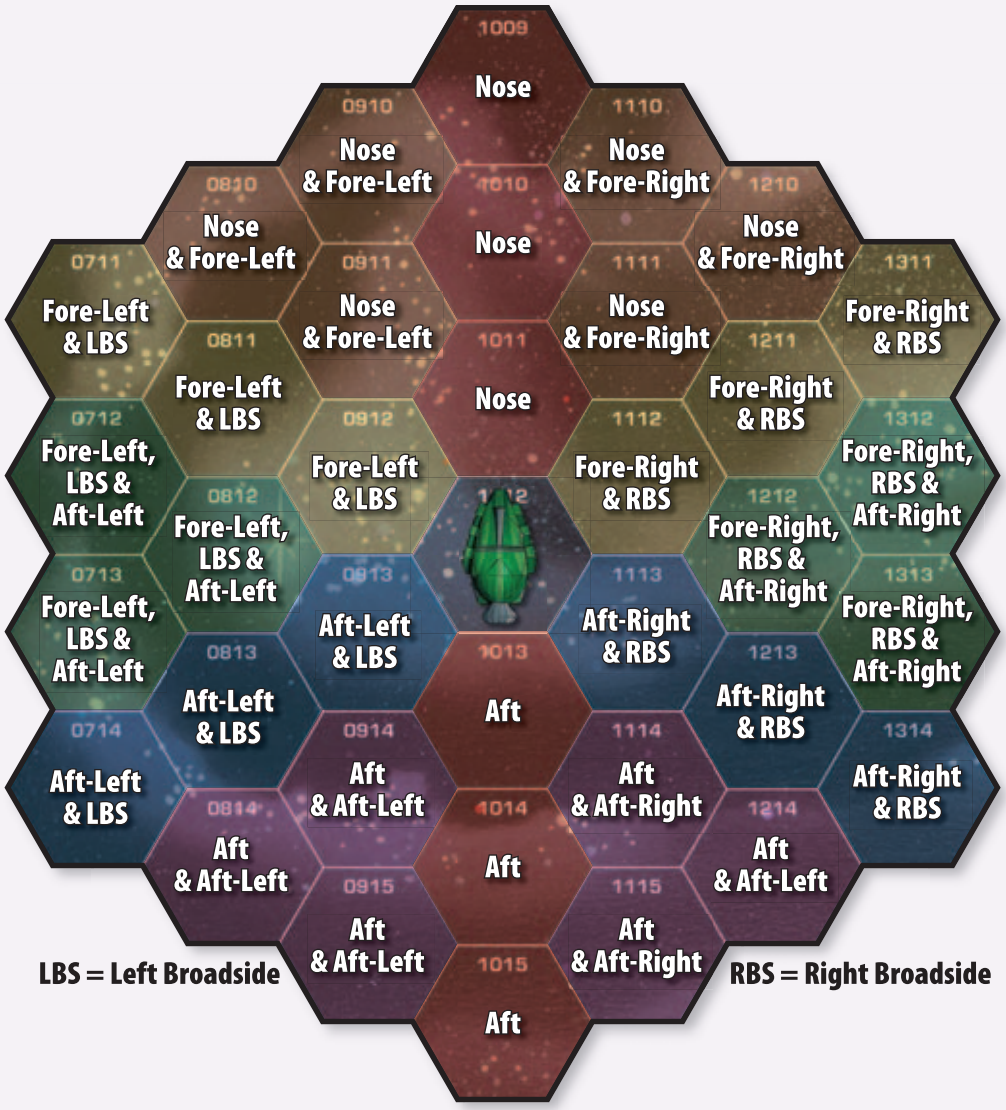
GENERAL RULES

The following rules provide additional options for aerospace combat. Some offer new tactical options while others enhance the detail and realism of aerospace combat, albeit at the expense of speed of play. All of these rules are optional and the participants should agree in advance to their inclusion in a game.

ADVANCED ANTI-AIRCRAFT

The core aerospace rules use the Movement Phase/Combat Phase breakdown common to standard rules games. However, when looking at the interaction of aerospace and ground units, this breakdown allows aerospace units to minimize the effect of return fire, as range is determined based on the target aircraft's end position rather than its closest approach to the anti-aircraft (AA) unit.

To more closely represent real-world AA, players may choose to allow the horizontal range at which the AA engagement takes place to be based on the closest approach the aerospace unit makes to the ground unit (or to Hex 0909 if the aerospace unit simply passes over the ground map hex while flying at low alti-



• WARSHIP FIRING ARCS DIAGRAM •

JUMPSHIP/WARSHIP/SPACE STATION HIT LOCATION TABLE

2D6 Roll	Nose	Aft	Side
2	Nose/Life Support	Aft/Fuel	Nose/Avionics
3	Nose/Control	Aft/Avionics	Front Side/Sensors
4	Fore-Right/Weapon	Aft-Right/Weapon	Front Side/Front Side Weapon
5	Fore-Right/Thruster	Aft-Right/Thruster	Front Side/Docking Collar
6	Nose/CIC	Aft/Engine	Front Side/K-F Drive
7	Nose/Weapon	Aft/Weapon	Aft-Side/Broadside Weapon
8	Nose/Sensors	Aft/Engine	Aft-Side/Grav Deck
9	Fore-Left/Thruster	Aft-Left/Thruster	Aft-Side/Door
10	Fore-Left/Weapon	Aft-Left/Weapon	Aft-Side/Aft-Side Weapon
11	Nose/Crew	Aft/Control	Aft/Cargo
12	Nose/K-F Drive	Aft/K-F Drive	Aft/Engine

RAMMING ATTACKS TABLE (EXPANDED)

Base To-Hit Number: 6 + (target Piloting Skill – attacker Piloting Skill)

Modifiers	
Attacker existing damage:	
Sensor damage	+1
Avionics damage	+1 per box
Target is (in space):	
Fighter or Small Craft	+4*
DropShip	+2
JumpShip	+0
WarShip	+1
Space Station	–1
Satellite	–2
Cannot spend thrust	–2
Evading	Variable**
Target is (in atmosphere):	
Grounded DropShip hex	–2††
Building hex	–2††
Grounded fighter or Small Craft	+4††
Ground Unit‡	+4
Large Support Vehicle	+2
Large Naval Vessel Support Vehicle	Variable‡‡
Small or Medium Airships§	–1
Large Airships§	–2
Mobile Structures	Variable§§
Airborne Air Mobile Structure	+0
Infantry	Not Possible§§§
Attacker is:	
Fighter or Small Craft	–2
DropShip	–1
WarShip	+1
In atmosphere	+2

*Fighter squadrons may not make (or be the target of) ramming attacks

**See p. 77, *TW*.

†If the attack misses, make a Control Roll with +4 modifier, –1 per level above 1 (Max of 0). If the Control Roll fails, the attacker crashes into the ground in the hex behind the target. (Control Roll does not apply if the target was airborne.)

††Target's Piloting Skill Rating is considered equal to attacker.

‡Includes 'Mechs, ProtoMechs, Combat Vehicles, Support Vehicles.

‡‡Apply the following modifier based upon template size: Type A = +1; Type B = +0 Type C = –1, Type D = –2; Type E = –3.

§Grounded or airborne.

§§Start with a +0 modifier, then apply a cumulative –2 modifier for every 10 hexes of size, or fractions there of, above 10; i.e. a 31 hex Mobile Structure would apply a –6 modifier.

§§§Hexes containing infantry can be targeted; apply the standard –4 to-hit modifier and treat as a standard crash (see *Avoiding or Taking Damage*, p. 82, *TW*) for effects on infantry in the hex.

tude). Modify the effective range to the target according to the standard altitude range rules (+2 hexes per altitude). When using the advanced AA rules, apply a to-hit modifier to the AA attack equal to the velocity of the target at the time of the attack (special maneuvers do not increase or reduce this velocity).

Additionally, it is strongly suggested that this rule always be used in conjunction with the Advanced Atmospheric Control Rolls rule (see p. 97), to ensure a balanced game for both ground and aerospace units.

> *In the Air-To-Ground Attacks Diagram on page 245 of* Total Warfare, *a* Shiva *aerospace fighter passes within 2 hexes (at Altitude 3 and Velocity 5) of the* Mad Cat *in Hex 2 that wishes to engage it, but ends its movement 15 hexes away. Under standard rules, the attack would be made at Range 21 (15 ground hexes + 2 hexes per altitude), but suffers no to-hit modifiers for the fighter's speed.*
>
> *Using the advanced AA rules, the* Mad Cat *can engage the* Shiva *at its closest horizontal point—2 hexes, for a total range of 8 hexes including altitude modifications—but if it does so, the attack suffers a +5 to-hit modifier for the* Shiva*'s speed (equal to its velocity).*

ADVANCED HEAT

As a means of simplifying aerospace combat, *Total Warfare* requires that all Large Craft operate on a zero net heat principle and apply the full heat of a firing arc's weapons even if only some of them fire. The advanced heat rules still require such units to generate only as much heat as they can dissipate, but rather than being limited by a whole arc's heat, the heat to be dissipated is only that of the bays (or individual weapons, if using the Individual Weapons rules on p. 114) that are fired. When using this detailed heat system, units may not exceed their heat dissipation capabilities, superseding the rules on p. 161 of *Total Warfare*.

> *Under the standard aerospace rules, a* Sovetskii Soyuz *firing the NPPCs in its left broadside would be required to dissipate 440 heat points (135 heat for each NPPC and 60 for each NAC). Under the advanced rules, the aerospace unit would only need to dissipate 270 heat points if firing just the NPPC bay.*

ADVANCED POINT DEFENSE WEAPONS

Many aerospace units carry weapons that are too small to use offensively against other Large Craft. Weapons such as machine guns, anti-missile systems, flamers and small lasers can, however, function defensively to target incoming enemy missiles (but not autocannon or Gauss rifle shells; they are too small and inert for targeting computers to track effectively). Weapons capable of functioning in this way are labeled as Point Defense Weapons in the Aerospace Weapon Classes Table on page 352 of *TechManual*. Weapons can switch between normal operation and point defense mode in the End Phase. Weapons or bays in point defense mode cannot be used offensively. Weapons (or bays) in normal mode cannot be used defensively.

A weapon in point defense mode has a range of 1 hex—the weapon defends the first hex in its firing arc (or hexes, in the case of the Broadside arc), and the hex containing the point defense weapons for attacks coming from that firing arc. It reduces the effect of enemy missile attacks (SRM, MRM, LRM, NLRM, ELRM, MML, ATM, Streaks—both SRM and LRM—and rocket launchers) aimed at or

passing through defended hexes by an amount equal to half (round up) the point-defense weapon/bay's capital-scale Attack Value. For the Thunderbolt (which is a single missile), use the standard AMS rule for a single missile (see p. 129, *TW*).

The unit using its point defense need not be the target of the attack—any attack passing through hexes protected by a unit's point-defense systems may be engaged by all applicable point defense weapons, which means that multiple arcs may have a chance of engaging a missile. To determine the exact arcs that can target a missile attack (if there are multiple arcs), note the hexsides where the attack entered and then exited the hex containing the unit mounting point defense weapons. The arcs that cover those two hexsides are the only two arcs that can potentially fire on the missile attack. If a missile attack passes along the line between two arcs, the defending player may choose to use the point-defense weapons in one or both arcs. (Unlike a missile attack targeted at the unit, the flight of a missile attack passing through the hex is not bearing directly at the target, and so only the point defense weapons in the arcs through which the missile attack passes may fire.)

A missile attack reduced to an Attack Value of 0 or lower causes no damage to the target.

Point defense bays can only be used once each turn. The player must declare that he will use point-defense weapons before the to-hit roll is made for the missile attack. No to-hit roll is required for the point defense weapons.

For fighter squadrons (see p. 27), total all point defense weapons in the squadron before determining damage and heat.

AMS: Each AMS in a bay inflicts 3 points of damage. Do not halve the damage of AMS bays, as described above for point defense weapon bays; AMS bays apply their full damage. AMS may fire multiple times in a turn, but only once per missile attack. The firing player must declare that he will use AMS before the to-hit roll is made for the missile attack. No to-hit roll is required for the AMS. (For this rule, treat Small Craft as Large Craft.)

Large Craft AMS bays in these advanced rules ignore the "firing by arcs" rules (see *Large Craft Weapon Bays*, p. 234, *TW*). Instead, even if the rest of the arc cannot fire (or has already fired, or will not fire), the AMS bay can fire. However, each use of an AMS generates heat for that bay. For example, an AMS bay composed of 4 AMS that are each fired 3 times in a turn would result in 12 points of heat. An AMS bay may not fire if doing so would cause the unit's total heat to exceed its dissipation capacity. Fighter AMS may only be used once per turn.

Large Craft AMS bays may be used against every attack that passes through the hex(s) that AMS bay defends. For example, an AMS bay in the Left Broadside of a WarShip could defend against any attack entering either of the two left broadside adjacent hexes, or against an attack entering the WarShip's hex from the direction of either left broadside hexsides. An AMS bay may fire multiple times per turn, expending ammunition for each missile attack they engage. The Large Craft need not be the target of the attack. The controlling player may choose to defend against *any* attack that passed through an AMS defended hex, even if the target is another unit in the same hex or a different hex (as described above).

For fighter squadrons (see p. 27), total all AMS in the squadron before determining damage and heat.

Capital Missiles: Capital (and sub-capital) missiles, whether standard or tele-operated, do not have their damage reduced by point defense bays. Instead, if not destroyed by point-defense fire (which occurs when they sustain a number of points of capital-scale damage equal to their own Attack Values), capital missiles suffer a +1 to-hit penalty for each point of capital-scale armor damage they sustain from passing through defended hexes of any point defense weapon/bay that engages them.

Only a PDW bay (2 or more weapons) can affect a capital missile; a single PDW has no effect. Once all the damage from a PDW bay has been determined, convert it to capital-scale damage and apply it to the missile to inflict the to-hit modifiers described above.

Arrow IV Missiles: Arrow IV missiles are treated exactly like capital missiles, except that in place of capital-scale damage, use standard-scale damage, giving an Arrow IV missile 20 points of standard-scale armor.

John controls a Dante*-class WarShip. He switches the appropriate systems into point-defense mode in the End Phase of the current turn. In the following turn, a 50-point LRM attack is aimed at the frigate. Before the attacker makes his to-hit roll, John declares that he will use the point defense weapons. The LRM attack passes through the front hex of the WarShip, which contains a 30-point point-defense bay. The point-defense bay reduces the LRM attack by 15 points (30 ÷ 2).*

A Killer Whale capital missile passes through another hex protected by point defense. The point-defense bay inflicts 3 points of capital-scale damage and so the Killer Whale missile suffers a +3 to-hit modifier when making its attack.

An AMS bay in the nose and aft of an Avalon*-class WarShip fires at two capital missiles passing through its hex, nose to aft, on their way to another target (since the attacks pass through the front and rear hexsides of the* Avalon*'s hex, the unit's nose and aft arcs can target the missiles; no other arcs may target them). For the nose arc, both missiles are engaged, generating 6 heat points (3 per firing) and 18 points of standard-scale anti-missile defense. For the aft arc, once again the player chooses to engage both missiles, generating 8 heat points (4 per firing) and 24 points of standard-scale anti-missile defense.*

ADVANCED ATMOSPHERIC CONTROL ROLLS

The standard aerospace rules as presented in *Total Warfare* require any unit to make a Control Roll in the End Phase of a turn in which it is damaged while in atmosphere. Under the advanced rules, such rolls are still needed. However, rather than for every turn in which it takes damage, Control Rolls are made in every turn where a unit takes an Avionics or Control critical hit (per standard rules) or where a unit sustains a hit that exceeds its Damage Threshold. If a threshold-exceeding hit occurs that also causes critical damage, two individual Control Rolls are made. The +1 modifier for 20 points of damage does not apply when using advanced atmospheric Control Rolls.

A Sabutai *aerospace fighter, operating at Altitude 6 is hit by an Inner Sphere medium laser on its nose for 5 points*

of standard-scale damage. With nose armor of 62 points (and thus a Damage Threshold of 7; 10 percent of 62, rounded up), this hit does not prompt a Control Roll (unless Variable Damage Thresholds are used; see p. 118). The same hit to the aft of the fighter (which has an Armor Value of 40 and thus a Damage Threshold of 4) would require a Control Roll.

AMMUNITION

Standard aerospace rules ignore ammunition considerations in combat, with regard to the ability to inflict damage and the impact of damage to weapons and ammunition supplies, in favor of ease of play. The following rules take such details into account.

Ammunition Expenditure

All units carry a limited amount of ammunition for their ballistic and missile weapons, and players, in an effort to increase the realism of aerospace unit combat, may choose to track ammunition expenditure. The standard ammunition load (available shots) for an ammunition-based weapon is listed in the unit's description (if looking at a Technical Readout) or on the record sheet. As in *BattleTech* ground unit game play, a single "shot" represents one use of the weapon, not a single shell or missile. For example, a ton of LRM-20 ammunition contains six shots—120 individual missiles.

When a player fires a weapon that requires ammunition, he should place a tally mark next to the ammunition line for that weapon. When the ammo bay is empty, the weapon cannot be fired for the remainder of the game unless reloaded (at right).

Ultra AC: Ultra AC weapons use two shots of ammunition every time they are fired. If only one shot remains for an Ultra AC, it is treated as though it were out of ammo. Players using the optional Individual Weapons rules (see p. 114) may opt to fire an Ultra AC at less than its maximum rate with commensurate reductions in the ammo consumed.

Rotary AC: By default, rotary autocannons (RACs) use six shots of ammunition every time they fire. If less than six shots remain for a RAC, it is treated as though it were out of ammo. Players using the optional Individual Weapons rules (see p. 114) may opt to fire a RAC at less than its maximum rate with commensurate reductions in ammo consumed and damage done.

AMS: Each individual firing of an AMS bay uses a shot, so an AMS bay that fires 3 times in a turn uses three shots.

Single-Shot: One-shot (OS) weapons may be fired once, after which they are considered out of ammo and may not be used.

Ammunition Explosions

Roll 2D6 whenever a weapons critical hit occurs on an ammunition-fed weapon to determine whether the damage is to the ammunition rather than the weapon itself. On a result of 10 or greater, the ammunition suffers damage; otherwise, only the weapon is destroyed. If the ammunition is explosive (any other than Gauss or Plasma ammo), an Ammunition critical hit causes damage equal to the weapon's Damage Value (not its Attack Value) multiplied by the number of shots remaining of the ammunition associated with that weapon/bay. If the ammunition is shared by weapons in multiple arcs (or if the weapon simply carries multiple tons of ammunition), roll 1D6 to determine the number of tons of ammunition involved.

Apply this damage in a single block to the armor of the same facing as the weapon struck, even if the ammo is shared (for example, if the critical hit struck a Nose/Weapon location, apply the damage to the nose armor; Right Side/Weapon damage results in damage to the right side, and so on). Fighters equipped with CASE suffer damage equal to a single attack's Damage Value (not its Attack Value) rather than the full ammunition associated with the weapon.

Per standard ground unit rules, players may wish Gauss rifles to explode and cause damage when they sustain damage. In such cases, when a Gauss weapon critical hit occurs, the location also suffers the effects of an ammunition explosion (the Gauss weapon explodes for the same amount of standard-scale damage as noted for ground-mounted weapons; see pp. 135-136, *TW*). Naval Gauss weapons do not explode if they suffer critical damage.

An LRM-20 with 1 ton of unused ammo suffers an ammo critical hit. A roll is made to see if an ammunition explosion occurs. The result is an 11, an explosion, and so the aerospace unit suffers 120 points of armor damage [20 (LRM-20 Damage Value, not Attack Value) x 6 (number of shots per ton)] on the same facing as the weapon. If the damaged unit had been a fighter whose ammo was protected by CASE, it would suffer only 20 points of damage (the Damage Value of a single attack). This is different than a heat-related explosion, which only inflicts damage on the unit's SI, with no additional damage applied or possible critical hits rolled.

RANDOM FACING TABLE

1D6 Roll	Facing
1	Nose
2	Fore-Right/Right
3	Fore-Left/Left
4	Aft-Right/Right
5	Aft-Left/Left
6	Aft

Rearming (Expanded)

The following rules build on those found on page 214 of *Tactical Operations*, covering those units presented in *Strategic Operations*, while providing some additional diversity to rearming.

Ammunition Explosion: Like fighters, Small Craft and DropShips, for WarShips, total this damage and then divide the result by 100 (rounding up).

JumpShips and Space Stations do not suffer SI damage. Instead, apply the damage in 20-point Damage Value groupings to a randomly determined facing, rolling 1D6 and using the Random Facing Table, see above), then roll 2D6 to determine the specific location damaged (per the Aerospace Hit Location Table, p. 237, *TW*).

Capital Missiles: A die roll is made for each capital missile, applying a +1 modifier to the roll result for every 50 tons.

DropShips: For every full 5,000 tons, apply an additional –1 modifier to all die roll results; a –4 modifier is the maximum modifier that can be achieved through tonnage.

Failed Ammo Loading: If ammunition fails to load, apply a –2 modifier to the die roll result to load that ammunition during another rearming attempt, provided no additional tonnage is allocated to the amount previously stated. For example, if a player attempts to load 4 tons of Ultra AC/10 ammunition and fails, a –2 modifier is applied on the next attempt (provided no additional tonnage is designated beyond the 4 tons).

Remember that capital missiles are treated as separate ammo

types, so no matter how many additional capital missiles a player attempts to load, a failed load of a capital missile will always apply a –2 modifier.

These modifiers are not cumulative; only a –2 modifier is ever applied, regardless of how many rearming attempts are made.

Military Units: Military units automatically apply a –1 modifier to all die roll results.

Crew Hits: For each Crew Hit on the Large Craft rearming, apply a +1 modifier to the die roll result (representing fewer crewmen available to do the job appropriately).

WarShip: WarShips, regardless of size, automatically apply a –1 modifier to all die roll results. Additionally, for every full 500,000 tons, apply an additional –1 modifier to all die roll results; a –4 modifier is the maximum modifier that can be achieved through tonnage.

During a long chase, a Nekohono'o*-class DropShip exhausts the ammunition for all 3 Kraken-T launchers in its nose, as well as the Gauss rifles in both the Fore-Left and Fore-Right locations and the 2 LRM-20s in the Fore-Left location. At the start of the Movement Phase (Aerospace), the controlling player announces a rearming action.*

He decides if he doesn't get serious ammo loaded he's going to be dead meat for his pursuer and so goes for broke, loading three tons of Gauss ammo, four tons of LRM ammo and 2 Kraken-T capital missiles.

First, he determines what the overall modifier will be to all die rolls for the various types of ammunition and comes up with +3 (three different types of ammo beyond the first; each capital missile is considered a different type of ammo).

He then determines the rolls for each ammo type and comes up with a +4 modifier for each Kraken-T [+3 (different types of ammunition) + 2 (100-ton capital missile) –1 (military unit) = +4]. He rolls twice with a result of 4 (for a total of 8) and 3 (for a total of 7). One missile is loaded; the other is not, but it can be reloaded at a later time (he notes down that he'll be able to apply a –2 modifier to that subsequent rearming attempt).

Next, he determines his Gauss ammunition and comes up with a +4 modifier [+3 (different types of ammunition) + 2 (2 tons beyond first ton) –1 (military unit) = +4]. A die roll result of 3 results in a success. He decides to slot two of the tons into his fore-left arc and the other ton into his fore-right arc.

Finally, he determines the LRM ammo and comes up with a +5 modifier [+3 (different types of ammunition) + 3 (3 tons beyond first ton) –1 (military unit) = +5]. A die roll result of a 9 gives a final result of 14! An accident has occurred. The Nekohono'o *suffers 480 points of damage [20 (LRM Damage Value) x 6 (number of shots per ton) x 4 (number of tons moved)], which is divided by 100 for a 5-point (4.8, rounded up) reduction in the* Nekohono'o*'s SI.*

Had the unit been a JumpShip, it would have taken armor damage rather than SI loss, the 480 points being applied in 20-point Damage Value groupings to random facings and locations.

Finally, ten space turns (10 minutes) must pass before that ammunition is available; during the Weapon Attack Phase of the eleventh turn after the die roll result was made, the ammo can be used.

ANTI-AEROSPACE CAPITAL LASER TARGETING MODE

Capital and sub-capital lasers are normally optimized for targeting Large Craft. They can, however, be placed in an AAA firing mode that uses the laser's main targeting mirrors to rapidly adjust their aim, allowing for easier hits against small targets.

During the End Phase of any turn, a player may announce that he is switching any capital and sub-capital lasers into or out of the AAA targeting mode; they remain in the selected mode until changed in a subsequent End Phase. While in AAA mode, the to-hit modifier for capital lasers is +3 (in place of the standard +5) against any non-Large Craft (this includes fighter squadrons); against the same targets, the to-hit modifier for sub-capital lasers is +1 (in place of the standard +3). However, targeting Large Craft becomes more difficult and all shots against such targets apply a +1 to-hit modifier, while in AAA mode.

Bracketing Fire Mode and Called Shots Mode: A weapon bay using Anti-Aerospace Capital Laser Targeting Mode in a turn cannot use Bracketing Fire Mode (see below) or Called Shots Mode (see p. 100).

ATTACKING THE JUMP SAIL

The bloody fighting of the early Succession Wars took a terrible toll on the JumpShip fleets of the Inner Sphere. As the wars progressed, the Successor States came to an unspoken agreement that placed JumpShips off-limits for attacks. In most cases, JumpShip crews surrendered their ships rather than risk damage. For those who chose to resist or flee, the most efficient way to stop them was to attack their massive energy-collecting sail, hampering their ability to recharge the Kearny-Fuchida drive while avoiding a direct attack on these valuable aerospace units.

If an attacker fires at a deployed sail (attached to a JumpShip or WarShip, or "detached" and left in orbit while its parent unit maneuvers), apply a –4 to-hit modifier to reflect the vast surface area of the sail. The material of the sail is ultra-thin and extremely fragile, so even the most powerful attacks simply tear a small hole in it. As a result, each successful hit on the sail reduces its integrity by 1 point, regardless of the weapon's Attack Value.

BRACKETING FIRE MODE (CAPITAL AND SUB-CAPITAL WEAPONS ONLY)

A skill lost during the Star League (along with the top-secret algorithms that made it practical to employ) and only recently rediscovered, bracketing fire is the art of dispersing fire in a carefully selected pattern to increase the chance of a hit.

Only capital and sub-capital weapons can use Bracketing Fire Mode (mass drivers, capital missiles and non-capital weapons cannot use Bracketing Fire Mode).

When using Bracketing Fire Mode, a player may lower the Damage Value of a weapon bay in order to increase the chance of a hit. Before a player rolls to see if a weapon bay strikes the target, he may announce he is using Bracketing Fire Mode. At the time the player announces he is using Bracketing Fire Mode, he also announces which to-hit modifier he is choosing from the Bracketing Fire Mode Table (see p. 100); as noted under the Minimum Number of Weapons in Firing Bay column, the to-hit modifier selected for a weapon bay can only be selected if that

BRACKETING FIRE MODE TABLE

Weapon Bay Damage Value Reduction*	To-Hit Modifier	Minimum Number of Weapons in Firing Bay
80%	–1	2
60%	–2	3
40%	–3	4

*Round all fractions down

bay contains the appropriate number of weapons. If the attack strikes the target, the player adjusts the damage as shown on the table.

If the players agree to the use of Bracketing Fire Mode, they're encouraged to figure out the Damage Value for various to-hit modifier reductions for each Weapon Bay under their control prior to game play to minimize disruptions during the game.

Minimum Range: Bracketing Fire Mode cannot be used against non-Large Craft (including fighter squadrons) at short range.

Anti-Aerospace Capital Laser Targeting Mode and Called Shots Mode: A weapon bay using Bracketing Fire Mode in a turn cannot use Anti-Aerospace Capital Laser Targeting Mode (see p. 99) or Called Shots Mode (at right).

Capital Weapons Fire in Atmosphere: Bracketing Fire Mode cannot be used with capital weapons fire in atmosphere (see p. 103).

A player with a modified Aegis*-class WarShip is being swarmed by several aerospace fighter squadrons and assault DropShips. Having already taken considerable damage, the controlling player really needs to start knocking some enemy targets down. During his weapon declaration, the player announces that he'll be firing an NAC/35, an NL55 and an NAC/10 weapon bay in the left-broadside arc using Bracketing Fire Mode, all against an* Achilles *DropShip.*

For the NAC/35 weapon bay, he announces a –1 to-hit modifier (the highest he can designate, since there are only two weapons in that bay). For the NL55, he announces a –2 to-hit modifier (again, the highest he can designate for that bay, as it only contains 3 weapons). Finally, for the NAC/10 bay, he's able to announce the highest to-hit modifier of –3, as that bay contains 5 weapons.

All three to-hit rolls succeed! The player then consults the Bracketing Fire Table. For the NAC/35 weapon bay, the 70 Damage Value is reduced by 20 percent for a final Damage Value of 56 [70 (original Damage Value) x .8 (–1 to-hit modifier reduction) = 56]. For the NL55 weapon bay, the 17 Damage Value is reduced by 40 percent for a final Damage Value of 10 [17 (original Damage Value) x .6 (–2 to-hit modifier reduction) = 10.2 (rounding down to 10)]. Finally, for the NAC/10 weapon bay, the Damage Value of 50 is reduced by 60 percent for a final Damage Value of 20 [50 (original Damage Value) x .4 (–3 to-hit modifier reduction) = 20].

CALLED SHOTS MODE

The size of many aerospace units and their components leaves them open to precisely targeted attacks by their opponents. Players may aim at specific locations on Large Craft, though such attacks are subject to the following restrictions:

- The target unit must be a Large Craft (see p. 74, *TW*).
- Capital-scale weapons may only make Called Shots against targets massing 50,000 tons or more (this will be noted in either the unit's Technical Readout entry or on its record sheet).
- Apply a +4 to-hit modifier. If the modified to-hit target number is greater than 12, the attack automatically fails.
- The attacker must nominate a valid hit location (as listed on the Aerospace Units Hit Location Table, p. 237, *TW*, or JumpShip/WarShip/Space Station Hit Location Table, p. 95, appropriate to the attack direction) before making the to-hit roll.
- If the attack succeeds, the damage is applied to the designated location.
- If the attack roll fails, the shot misses the target.
- Targeting Computers use the above rules instead of the Aimed Shots rules (see p. 110, *TW*); they still apply their standard –1 to-hit modifier.

Anti-Aerospace Capital Laser Targeting Mode and Bracketing Fire Mode: A weapon bay using Called Shots Mode in a turn cannot use Anti-Aerospace Capital Laser Targeting Mode (see p. 99) or Bracketing Fire Mode (see p. 99).

Capital Weapons Fire in Atmosphere: Called Shots Mode cannot be used with Capital Weapons Fire In Atmosphere (see p. 103).

A fighter attacking an enemy DropShip attempts to target a specific location on the hostile unit, namely the FCS system mounted in its nose. The pilot has a Gunnery Skill Rating of 4 and the attack is at Medium Range (+2) against the nose of the enemy (+1), for a base to-hit number of 7. Applying the +4 to-hit modifier for a Called Shot, the modified to-hit number increases to 11. If the attack roll succeeds, the Attack Value is applied to the specified location (in this case, Location 6 on the nose).

CAPITAL MISSILE BEARINGS-ONLY LAUNCH

Under standard rules, once launched, a capital missile automatically uses its active radar to home in on its assigned target. The firing unit must be able to detect the specific target before the missile is launched and the missile will home in on that target exclusively. (In game terms, this is a normal attack as described in *Total Warfare* on p. 235, or page 251 for tele-operated capital missiles.)

In a bearings-only missile launch, a missile can be fired "blind" without a predetermined target and instead sent to a predetermined location before it goes active, seeking out the nearest valid target from that point. Bearings-only missile launch rules can be used in three different styles of game play: standard (players are using mapsheets), bearings-only launches not directly on the playing area, and High Speed Engagements (see p. 74).

Regardless of the style of game play, a bearings-only missile launch is resolved in four steps: Designation Phase, Movement Phase, Detection Phase and Attack Phase, described starting on the following page. Specific considerations given for each style of game play are discussed in each section.

Designation Phase

In order to fire a missile under a bearings-only launch, the missile must be preprogrammed the turn prior to launch. During the Indirect Artillery Attack Phase (see p. 179, *TO*) in the turn prior to a bearings-only missile launch, the controlling player of the firing unit must designate and mark down three details about the missiles being fired:

- **Detection Range (Default is Long Range):** The missile Detection Range is the range at which a bearings-only launched capital missile will detect targets, thus determines the maximum Base To-Hit Number. Shorter ranges can be designated, but make it much more difficult for a bearings-only missile to find its target, owing to the smaller area it scans.
- **Launch Velocity:** A standard capital missile has a Launch Velocity of 50 hexes per turn, while a tele-operated missile has a Launch Velocity set by the player that must follow all standard tele-operated rules (see p. 251, *TW*). Additionally, for standard play, if the missile is fired in any forward arc, add the velocity of the launching unit; if fired in any aft arc, subtract the velocity of the launching unit. If using advanced vector movement (see p. 64), the missile starts with the same vector values as the launching unit and then adds the appropriate Launch Velocity (50 for a standard missile, or the value set by the player for a tele-operated missile) to the facing the missile will first pass through as it exits the launching unit's hex. This step is not required for high-speed closing engagements.
- **Activation Hex:** The Activation Hex (which a player notes secretly) is where the capital missile will activate (become active) and begin searching for a target. This step is not required for High Speed Closing Engagements.

In a large standard-play space combat scenario, during the Indirect Artillery Attack Phase of Turn 1, Terrence decides to launch a standard capital missile in a bearings-only launch situation. He decides to go for a Medium Detection Range (as opposed to the default Long Detection Range). He also notes that with a bearings-only launch, the missile has an automatic Launch Velocity of 50 (+5, since the launching unit has a Velocity of 5, so a total Launch Velocity of 55) and he determines the Activation Hex. Looking at the map, he hopes he's figured out where his opponent is going to place some units in the coming turns, and so he secretly notes an Activation Hex 115 hexes away.

Movement Phase

How a capital missile moves under a bearings-only launch depends on the style of game play used, as described below.

Standard Play: Bearings-only launched missiles are launched during the Indirect Artillery Attack Phase (see p. 179, *TO*), the turn after they executed a Designation Phase preprogramming. For a standard missile, if the Activation Hex (designated during the Indirect Artillery Attack Phase of the turn prior) is located 50 hexes (plus or minus the launching unit's velocity) or less from the launching unit, place the bearings-only launched missile in the Activation Hex at the start of the Weapon Attack Phase of the turn in which the missiles were launched. For a tele-operated missile, it is only placed in the Activation Hex at the start of the Weapon Attack Phase of the turn in which the missile was launched if the Activation Hex is equal to or less than the Launch Velocity (plus or minus the launching unit's velocity) set by the player. In both instances, the missile will actively seek a target per the rules in the Detection Phase (at left).

If the Activation Hex is located more than 50 hexes away from the launching unit (for a tele-operated missile, if the Activation Hex is located more hexes away than the Launch Velocity), then the missiles will not go active, but instead will travel 50 hexes (plus or minus the launching unit's velocity) on a direct course to the Activation Hex (for a tele-operated missile, they travel a number of hexes equal to the Launch Velocity set by the player); the launching player should indicate that the missile is not yet active. Each turn after the turn in which a missile was launched, during the Indirect Artillery Attack Phase, the missile will travel another 50 hexes (for a tele-operated missile, it will travel a number of hexes equal to its Launch Velocity). During any Indirect Artillery Attack Phase, if the missile will reach the Activation Hex within the 50 hexes it travels that turn (for a tele-operated missile, within the number of hexes equal to its Launch Velocity), the launching player must indicate that the missile is going active at the start of that turn's Weapon Attack Phase. In all instances, the facing of the missile is based on a straight line from the launching unit to the Activation Hex.

Bearings-Only Launches Not Directly on the Playing Area: Bearings-only launched missiles may be treated as artillery not directly on the playing area (see p. 179, *TO*), with the following changes:

- As with standard play, note the Detection Range and Activation Hex.
- The launching player must designate the entry hex from which the missile with enter the map. This hex must be on the player's home edge.
- Bearings-only launched standard missiles travel three mapsheets per turn (51 hexes, at 17 hexes per mapsheet; for ease of play it's rounded to 50) and enter the playing area with a Velocity of 50.
- Bearings-only launched tele-operated missiles travel a number of mapsheets per turn equal to their Launch Velocity divided by 17 (for ease of play, rounding up).
- On the turn they enter the playing area, regardless of how many mapsheets they traveled prior to entering, the missiles automatically travel 50 hexes.
- Once the missile enters the playing area, use the standard rules above to determine how far it moves and when it goes active.

Tele-operated missiles fired from off the playing area may not use the optional waypoint rules (see *Capital Missiles Preprogrammed Waypoint Launches*, p. 102).

The "mapsheets" reference above assumes the use of mapsheets the size of standard ground maps; adjust flight times appropriately for mapsheets of different sizes. If players agree, they may use the Artillery and Rolling Maps rules (see p. 179, *TO*), to allow for pursuit and attack of missile-only launching units outside the playing area.

In both standard play and bearings-only launches not directly on the playing area, if using the rules for attacks on capital missiles (see *Targeting Capital Missiles*, p. 117), the missile may only be attacked in the turn it activates and any turn

thereafter, including the turn of impact against the target, as long as it is on the playing area.

High Speed Closing Engagement: There is no Movement Phase in High Speed Closing Engagements; proceed directly to the Detection Phase (see below).

During the Indirect Artillery Attack Phase of Turn 2, Terrence places a penny on the playing area to indicate a missile—tails up, indicating it is inactive—and the missile moves 55 hexes (its Launch Velocity). During the Indirect Artillery Attack Phase of Turn 3, the missile again moves 55 hexes, for a total of 110 hexes. In Turn 4, during the Indirect Artillery Attack Phase, the missile travels another 55 hexes. It will reach its Activation Hex in this turn; the Activation Hex was 115 hexes from the launching unit, and so Terrence turns the penny over to face heads-up at the start of Turn 3's Weapon Attack Phase. This shows that the missile has gone active in the Activation Hex.

Detection Phase

Once the missile has reached its pre-determined Activation Hex and activates, it then enters its Detection Phase. How a missile acts during the Detection Phase depends on the style of game play used, as described below.

Standard Play: For standard play, the missile automatically detects all targets in its nose firing arc out to a distance equal to its Detection Range (the range the controlling player designated before the missile launched). The missile will then attack the nearest detected enemy Large Craft. If two or more targets are equidistant, the missile will attack the target with the higher tonnage. If the targets are the same tonnage, determine the target randomly. If no valid Large Craft is detected, the missile will repeat this process for any valid Small Craft targets in the nose arc. A bearing-only launched capital missile cannot target anything smaller than a Small Craft.

If no valid targets are detected, the missile will remain active and in the following turn will continue to travel in a straight line at its launch velocity. If the missile is still on the playing area in the following turn, it will repeat the Detection Phase at the start of the following turn's Weapon Attack Phase. If it exits the playing area, it is removed from play.

As previously noted, the default Detection Range is Long (per standard weapon range bands; see p. 235, *TW*), but may be set for Short, Medium or Extreme. Shorter ranges make it less likely the missile will spot a target, but lower the target number in the Attack Phase, while the opposite applies for Extreme detection ranges.

A tele-operated missile operates exactly like a standard missile in this situation, except the operator can select which detected target to attack within the Detection Range.

Bearings-Only Launches Not Directly on the Playing Area: Once a bearings-only launched missile arrives on the playing area, it is treated exactly like a missile under standard play, as described above; this applies to the Detection Phase as well as the Attack Phase (see p. at right).

High Speed Closing Engagement: The Detection Phase occurs at the start of the Capital Missile Attacks sub-phase, where the missile is automatically considered active. The capital missile makes a single Detection Check as though it was a Small Craft with active radar (see *Radar*, p. 119), using a Piloting Skill Rating of 5 against all Elements in the targeted Unit. A Short Detection Range imposes a +2 modifier on the Detection Check, while a Medium Detection Range imposes a +1 modifier; a –1 modifier applies for Extreme Detection Range.

If a missile fails to detect any target, it is removed from play.

A tele-operated missile operates exactly like a standard missile in this situation, except the operator can select which detected Element within a Unit to attack.

Now that his missile is active, Terrence looks at the playing area and realizes his guess was right; there are two enemy Large Craft within 12 hexes (the Medium Detection Range he designated) and his missile automatically detects both the DropShip and the WarShip. As both enemy units are exactly 10 hexes away, the missile will attack the larger target, the WarShip.

Attack Phase

A bearings-only launched capital missile makes a to-hit roll on its selected target with a Gunnery Skill Rating of 4, no matter the Gunnery Skill Rating of the launching aerospace unit; no to-hit modifiers that apply to the launching unit apply to the missile. The exact mechanics for the attack depend on which style of game play is in use, as described below.

Standard Play: Range is determined per normal weapon attacks. All other modifiers apply as for a standard attack, including ECM and Angle of Attack. If the target is at a range different from the set Detection Range—for example a missile is set to long range detection and the target is at short range—apply an additional +1 modifier to hit (this represents the difficulty of the missile in adjusting its vector radically).

High Speed Closing Engagements: Range to the target is equal to the Detection Range set for the missile prior to launch. All other modifiers apply as for a standard attack, including ECM and Angle of Attack. To determine the missile's angle of attack, use the Facing After a Fall Table (see p. 68, *TW*), with a result of 1 representing a shot against the target's nose.

Terrence figures his numbers (he remembers to add the ECM, as they're playing with the Electronic Warfare rules; see p. 110) and comes up with a final modified to-hit number of 10 [4 (Gunnery Skill Rating of a bearings-only launch) +1 (Angle of Attack; he's coming in at the WarShip's nose) + 3 (3 hexes of enemy ECM, including the target's hex) +2 (Medium Range) = 10]. He rolls 2D6 and comes up with a 10; he hit the ship!

CAPITAL MISSILE PREPROGRAMMED WAYPOINT LAUNCHES

A standard missile—whether fired normally or under the bearings-only launch rules (see p. 100)—may execute a single pre-plotted course correction of up to one hexside, but may do so only in the first three hexes after being fired from the launching unit (i.e. before it has sprinted to full speed and would need to spend much more fuel on the course correction). This option is most commonly used by WarShips to fire their side-mounted missiles into the forward or rear arcs. This maneuver does not affect the range of the missile, but does impose a +1 to-hit modifier.

Tele-operated missiles fired under bearings-only launch rules (see p. 100) may also be programmed to move to a pre-determined hex (or a number of hexes) prior to activation: these hex(s) are designated as waypoints. The entire intended course should be noted down prior to the missile being launched and must adhere to all standard tele-operated maneuvering and fuel usage (see p. 251, *TW*).

CAPITAL WEAPONS FIRE IN ATMOSPHERE

Capital and sub-capital weapons can be fired through a Space/Atmosphere Interface and Atmospheric Row hexes (see High-Altitude Map, p. 75, *TW*); non-capital weapons cannot be fired using any of these rules. However, the specific rules for how such attacks occur depend on where the attacker and target are located.

The following bullet points list which rules to use in this section, based on attacker and target locations. If a situation is not listed below, then the attack cannot be made using capital or sub-capital weapons; for example, an airborne-to-airborne attack cannot be made.

- **Orbit-to-Surface Fire:** Attacker is located in a space hex, targeting a hex on a ground mapsheet.
- **Airborne-to-Surface Fire:** Attacker is located in an Atmospheric Row hex (see High-Altitude Map, p. 75, *TW*) or using Low-Altitude Movement, targeting a hex on a ground mapsheet.
- **Surface-to-Orbit Fire:** Attacker is located on a ground mapsheet (including landed aerospace units) and is targeting a unit in a space hex.
- **Airborne-to-Orbit Fire:** Attacker is located in an Atmospheric Row hex (see High-Altitude Map, p. 75, *TW*) or using Low-Altitude Movement, targeting a unit in a space hex.
- **Surface-to-Surface Fire:** Attacker is located on a ground mapsheet (including landed aerospace units) and is targeting a hex on a ground mapsheet.

Game Turns: One space turn is 60 seconds while a ground turn is 10 seconds. Therefore, the following time limits are involved when making such attacks.

- **Orbit-to-Surface Fire:** While this attack can be made every space turn, the resolution of such attacks on ground mapsheets takes place only every six ground turns.
- **Airborne-to-Surface Fire:** All attacks are tracked using standard ground turns.
- **Surface-to-Orbit Fire:** This attack can only be made once every six ground turns (one space turn).
- **Airborne-to-Orbit Fire:** This attack can only be made once every six ground turns (one space turn).
- **Surface-to-Surface Fire:** All attacks are tracked using standard ground turns.

Construction: Capital-scale weapons (and sub-capital scale weapons; see p. 343, *TO*), depending on the type, can be mounted in ground buildings or units, and used to attack units in orbit. Both situations are rare; ground facilities are known as SDS (Space Defense System) bases, while the mounting of such weapons on mobile units is exceedingly rare. See *Advanced Buildings*, page 131 in *Tactical Operations*, to determine which capital/sub-capital scale weapons can be mounted in a building; see *Naval Autocannons*, p. 331; *Naval Gauss*, p. 333; *Naval Laser*, p. 333; *Naval* PPC, p. 333; and *Sub-Capital Weapons*, p. 343 in *Tactical Operations* to determine which units might mount which type of capital/sub-capital weapons.

Bomb Munitions: Under standard conditions, bomb munitions cannot cross the Space/Atmosphere Interface. Using these rules, however, the Air-to-Air Arrow (AAA) missile (see p. 357, *TO*), Anti-Ship (AS) missile (see p. 358, *TO*) and Anti-Ship Electronic Warfare (ASEW) missile (see p. 358, *TO*) can cross the Space/Atmosphere Interface. Treat those specific bomb munitions as standard capital missiles in all situations, but apply an additional +1 to-hit modifier.

Orbit-to-Surface Fire

A unit can fire its capital/sub-capital weapons at ground targets (commonly referred to as orbital bombardment or naval fire support), but may not make any other type of weapon attack in the same turn (though it may use point-defense and AMS).

The target ground hex on the High-Altitude Map (see p. 75, *TW*) must be within the firing arc of the bay used and must be in range (taking into account range modifications for firing through atmosphere hexes; see p. 236, *TW*). The attacker nominates a hex (30 meters) on the ground mapsheet as the target for each weapon and/or weapon bay attack. The attack from each bay is targeted and resolved separately (or from each weapon, if a unit only mounts a single weapon or the players are using the Individual Weapons rules; see p. 114).

Each orbit-to-surface attack is resolved using the Artillery rules (see 179, *TO*) with the following additions and exceptions.

- An orbit-to-surface attack can only target a hex.
- The base Damage Value of each attack is the Attack Value of each bay.
- Apply standard range modifiers for CIC or sensor damage to the base to-hit number.
- Apply standard to-hit modifiers for firing through atmospheric hexes (this means a capital-scale weapon must have at least a long range to be used in an orbit-to-surface attack).
- TAG may be used to designate the target hex (see p, 142, *TW*), and if successful applies a –2 to-hit modifier.
- The target hex is immobile and so must apply the standard –4 to-hit modifier.
- Direct-Fire Energy Weapon attacks arrive on the ground mapsheet in the same turn they were fired.
- Direct-Fire Ballistic Weapon attacks arrive on the ground mapsheet during the Indirect Artillery Attack Phase, the turn after they were fired.
- Capital Missile Weapon attacks arrive on the ground mapsheet during the Ground Indirect Artillery Attack Phase 1D6 ground turns after they were fired (the controlling player makes the roll in secret, without announcing when it will arrive; the controlling player should write the turn number when the attack will arrive on a piece of paper and place it face down next to the playing area). Such guided weapons apply a –2 to-hit modifier (–3 for Barracudas only; –1 for any tele-operated missiles) and scatter only half (round up) the usual distance.
- Orbit-to-surface attacks cannot be pre-plotted.
- Like standard artillery, each subsequent orbit-to-surface attack against the same target hex receives a –1 to-hit modifier if there is a friendly unit with LOS to the target hex.

In many cases the modified to-hit number may be higher than 12, but an attack roll should still be made, as the orbit-to-surface attack will still hit *somewhere* (though not at the intended point) and damage targets over a large area even if the attack misses its intended target hex.

In the target hex, the damage inflicted is equal to the bay's

(or weapon's) Attack Value multiplied by 10 (i.e. converted to standard scale). For each hex away from the target hex, reduce the multiplier by 2; adjacent hexes suffer Attack Value x 8, and so on. Units more than 4 hexes away from the target hex suffer no damage. All damage is divided into 5-point Damage Value groupings and assigned randomly; 'Mechs in target hex use the Shots From Above portion of the special 'Mech Hit Location Table (see p. 175, *TW*). Determine attack direction for any units outside the target hex as if the attack originated in the target hex.

This damage is also applied vertically into the elevations above the various hexes (meaning an airborne VTOL in a target hex that is at the correct elevation may still be damaged). In the target hex, for each subsequent elevation above the level of the underlying struck hex, divide the Attack Value by 2 (round down) and apply that damage to the next elevation. This is repeated for four additional elevations, dividing each new Attack Value by 2 each time. No additional damage from the orbit-to-surface attack is assigned to the fifth elevation (or beyond). This same procedure is repeated for each adjacent hex, starting with the damage assigned to each hex, dividing by 2 (round down) for each elevation; for the second ring, the damage only rises three elevations, for the third ring the damage only rises two elevations, while the fourth ring damage only rises one elevation. Note that all such damage is in relation to the target hex, not adjacent hexes, as their levels may be higher; if lower, then the standard number of elevations is used. If a unit falls into multiple elevations due to its height, damage is not applied twice; simply apply the most severe damage. Finally, this type of vertical damage does not apply to buildings or Mobile Structures, which follow their own rules (see p. 105).



A Potemkin*-class WarShip prepares for an orbit-to-surface attack.*

Airborne Units: If an aerospace unit (including an Air Mobile Structure) is using the Low-Altitude Movement rules and occupies the same hex corresponding to the mapsheet where the orbit-to-surface strike occurs, the controlling player of that unit rolls 2D6. On a result of 12, the orbit-to-surface attack strikes the airborne aerospace unit. Resolve damage normally. If there is any damage remaining, that damage becomes the Damage Value used for the target hex; subsequent damage applied to the adjacent hexes uses the new Damage Value.

If an aerospace unit is using the Aerospace Units on Ground Mapsheets rules and occupies the target hex where the orbit-to-surface attack strikes (or if a non-aerospace airborne unit occupies that same target hex), the controlling player of that unit rolls 1D6. On a result of 6, the orbit-to-surface attack strikes the airborne unit; resolve as described above.

Area-Effect Weapon: Orbit-to-surface attacks are area-effect weapons, and so all rules that apply to such weapons also apply to orbit-to-surface attacks (for the exception, see *Castles Brian*, below).

Atmospheric Pressure: If using the Atmospheric Pressure Planetary Conditions rules (see p. 54, *TO*), modify the orbit-to-surface attack as follows:

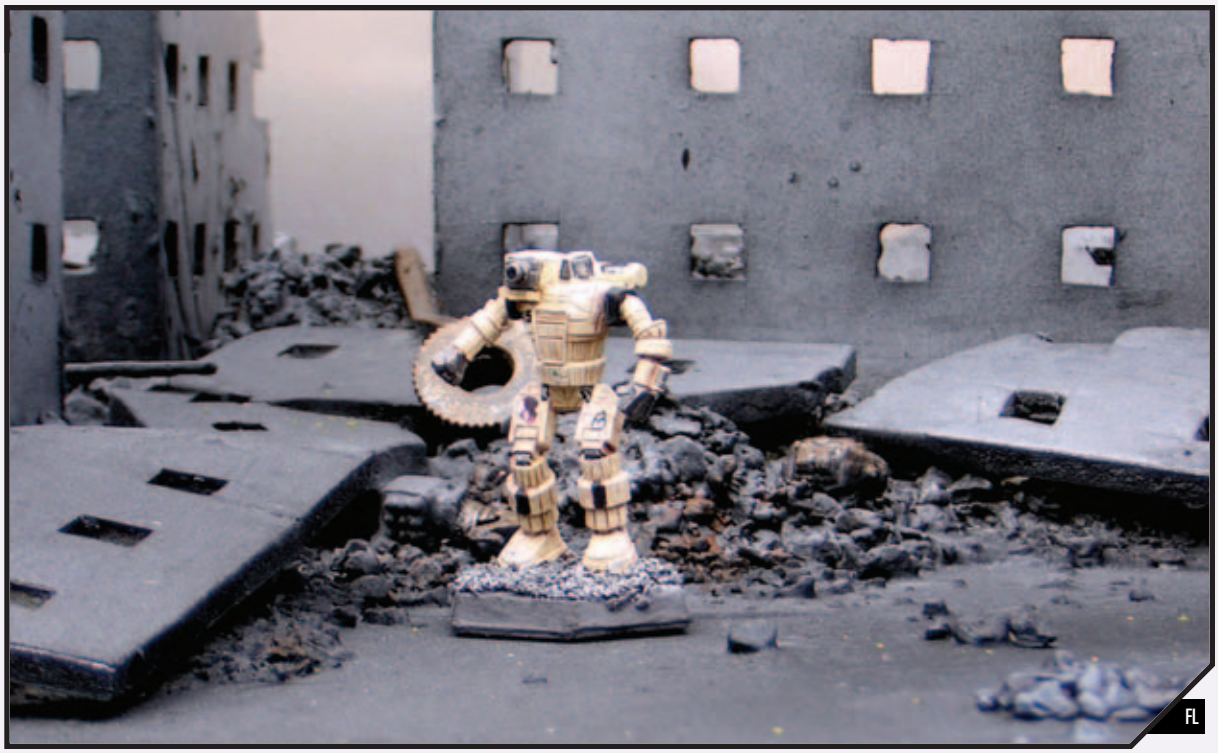
- **Vacuum:** No to-hit modifiers for atmosphere, ground or space/atmosphere hexes are applied.
- **Trace:** No to-hit modifiers for space/atmosphere hexes are applied; treat each atmosphere and ground hex as 2 hexes of range.
- **Thin:** No to-hit modifiers for space/atmosphere hexes are applied; treat each atmosphere and ground hex as 4 hexes of range.
- **High:** Treat each space/atmosphere hex as 4 hexes and each atmosphere or ground hex as 8 hexes of range.
- **Very High:** Treat each space/atmosphere hex as 6 hexes and each atmosphere or ground hex as 10 hexes of range.

Buildings: If a unit occupies a non-Fortress or -Castle Brian building hex, or a non-Hardened building hex for any other classification (see *Advanced Building Classifications*, p. 114, *TO*), in a hex damaged by an orbit-to-surface attack, full damage is applied to the unit as well as the building hex.

Castles Brian: Castles Brian Construction Factors (see *Advanced Building Classifications*, p. 114, *TO*) are in capital-scale, so there is no "times 10" scale conversion when applying damage. For each Castle Brian hex beyond the target hex, simply determine the damage as described above and then divide by 10 (round up).

Construction Factor (Expanded): When using the expanded Construction Factor rules (see p. 121, *TO*), the full damage from an orbit-to-surface attack is still assigned to every level within a building hex (as well as every level in every hex that takes damage in a multi-hex building) regardless of how many levels there are. The only exception is a Castle Brian hex(s), which is specifically designed to withstand an orbit-to-surface attack. In the case of a Castle Brian and the use of the expanded Construction Factor rules, damage is assigned in the following manner (the following applies to an attack that strikes the roof of a multi-hex Castle Brian, but the rules can be extrapolated to determine how damage would be assigned if the blast wave hit the side of a multi-hex/multi-level Castle Brian building):

- **Target Hex:** The roof level of the building in the target hex is assigned the full capital-scale damage. For each level below the roof, divide the Attack Value by 2 (round down) and apply



A pirate Hunchback *scavenges through the devastation wrought on a city after a terrifying orbital bombardment by a WarShip.*

that damage to the next level. This is repeated for four additional levels, dividing each new Attack Value by 2 each time. No additional damage from the orbit-to-surface attack is assigned to the fifth level (or beyond) below the roof level.

- **First Ring of Hexes:** The damage assigned to the roof level of the first ring of hexes adjacent to the target hex is the same as described above under *Castles Brian*. For each level below the roof, divide that Attack Value by 2 (round down) and apply that damage to the next level. This is repeated for three additional levels. No additional damage from the orbit-to-surface attack is assigned to the fourth level (or beyond) below the roof level.
- **Second Ring of Hexes:** The damage assigned to the roof level of the second ring of hexes adjacent to the target hex is the same as described above under *Castles Brian*. For each level below the roof, divide that Attack Value by 2 (round down) and apply that damage to the next level. This is repeated for two additional levels. No additional damage from the orbit-to-surface attack is assigned to the third level (or beyond) below the roof level.
- **Third Ring of Hexes:** The damage assigned to the roof level of the third ring of hexes adjacent to the target hex is the same as described above under *Castles Brian*. For each level below the roof, divide that Attack Value by 2 (round down) and apply that damage to the next level. No additional damage from the orbit-to-surface attack is assigned to the second level (or beyond) below the roof level.
- **Fourth Ring of Hexes:** The damage assigned to the roof level of the fourth and final ring of hexes adjacent to the target hex is the same as described above under *Castles Brian*. No additional damage from the orbit-to-surface attack is assigned to any levels below the first level.

Mobile Structures: Mobile Structures use the Building rules when determining damage from an orbit-to-surface attack (see *Buildings*, p. 104).

Naval C³: A DropShip mounting a Naval C³ (see p. 332, *TO*) may reduce the to-hit range modifier for an orbit-to-surface attack by one range band under any of the following three conditions:

- If the DropShip is on the Low-Altitude Map and flying at Altitude 6 or less and is in a hex corresponding to the ground mapsheet where the target hex for the orbit-to-surface attack is located.
- If the DropShip is using Aerospace Units on Ground Mapsheets rules, it must be on the playing area (regardless of how large the area is).
- If the DropShip is grounded, it must be on the playing area (regardless of how large the area is); LOS from the DropShip to the target hex need not exist.

For example, if an orbit-to-surface attack by a Heavy NPPC bay has a link to a Naval C³ as described above, the +2 Medium Range to-hit modifier would be used in place of the +4 Long-Range to-hit modifier.

The orbit-to-surface firing unit must still be able to reach the target with its attacking weapons (Long or Extreme Range weapons only).

Levels (Hills), Grounded DropShips, Buildings and Mobile Structures: If any of these units/terrain features are higher than both the underlying level of the target hex and a unit/building occupying a hex that would be damaged by an artillery attack, and these units/terrain features lie along the LOS between the target hex and the hex occupied by the unit, use the rules for artillery when determining this outcome of an orbit-to-surface attack (see p. 184, *TO*).

Terrain Factor: If Terrain Factor Rules (see p. 64, *TO*) are in use, an orbit-to-surface attack simultaneously damages the hex itself and any terrain in the hex. Full damage is assigned to both. In the case of very large Attack Values for an orbit-to-surface attack, this will likely lead to the creation of a large crater across the area damaged by the attack. The only exceptions are multi-hex buildings and multi-hex Mobile Structures (see p. 165, *TO*) that are completely surrounded by adjacent building hexes from the same building, or adjacent Mobile Structure hexes, where the building or Mobile Structure hex is not destroyed by the attack. If such a building/Mobile Structure hex is destroyed, full damage is applied to the hex itself. If a ground unit is located in a hex that loses a level, it automatically falls (see *Unit Displacement*, p 151, *TW*); the exception is Mobile Structures, which do not fall unless all hexes that the unit occupies are reduced in level. If a building is located in a hex that loses a level, apply an additional 10 points of damage per level lost to that building hex (if using the expanded Construction Factor rules on p. 121, *TO*, the 10 standard-scale points of damage are applied to every level within that building hex). Finally, the same rules that apply to blocking damage to a target as described under *Buildings and Levels* above also apply to damage for the hex itself when using Terrain Factor rules.

Water: If the target hex is a water hex, this damage is also applied vertically into the depths below the various hexes. In the target hex, for each subsequent depth below the surface of the struck water hex, divide the Attack Value by 2 (round down) and apply that damage to the next depth. This is repeated for four additional depths, dividing each new Attack Value by 2 each time. No additional damage from the orbit-to-surface attack is assigned to the fifth depth (or beyond). This same procedure is repeated for any adjacent water hexes, starting with the damage assigned to each hex, dividing by 2 (round down) for each depth; for the second ring, the damage lowers three depths, for the third ring the damage lowers two depths, while the fourth ring damage only lowers one depth. Note that all such damage is in relation to the target hex, not adjacent hexes, as their levels may be higher; if lower, then the standard number of elevations/depths is used. If a unit falls into multiple elevations/depths due to its height, damage is not applied twice; simply apply the most severe damage. Finally, this type of vertical damage does not apply to buildings or Mobile Structures, which follow their own rules (see above).

If the target hex is not a water hex and an adjacent hex is a water hex, no damage is applied to completely submerged targets in that adjacent hex.

If a water hex or series of water hexes are completely surrounded by non-water hexes, and all the water hexes and the accompanying adjacent non-water hexes are within the blast radius, reduce the surface level of the water by 1; in this instance, all Depth 1 hexes are converted into Sublevel 1 mud (see p. 50, *TO*).

Woods: Woods hexes provide no protection against damage from orbit-to-surface attacks.

Minefields: An orbit-to-surface attack (as well as a airborne-to-surface and surface-to-surface attacks; see pp. 108 and 110, respectively) automatically clears a minefield hex if damage from the attack is applied in the mined hex at the level of the underlying terrain (see *Clearing Minefields*, p. 210, *TO*).

In the Orbit-to-Surface Attack Diagram on page 107, a Sovetskii Soyuz*-class WarShip orbiting 1 hex above the space/atmosphere interface hex row makes an orbit-to-surface attack with its broadside NPPCs at a ground target hex on the Military Base #1 map. The aerospace unit's CIC and sensors are undamaged and so the final modified to-hit number is 12 [4 (Gunnery Skill) + 4 (long range: 4 atmospheric hexes = 24 hexes; + the ground hex = 6 hexes; + 3 hexes for the space/atmosphere interface hex = 33 hexes) + 8 (four atmospheric hexes) – 4 (immobile target) = 12]. The controlling player is attempting to strike Hex A, which contains a grounded DropShip, and rolls 2D6 with a result of 11; the Margin of Failure is 1 and so the attack scatters 1D6. The controlling player first rolls 1D6 to determine the direction of the scatter, with a result of 3—two hexsides to the right of the numbered hexside. The controlling player then rolls 1D6 to determine how far it scatters, with a result of 6—the orbit-to-surface attack scatters 6 hexes to Hex B.*

The base Attack Value of two NPPCs is 18 points of capital-scale damage and so 180 points of standard-scale damage [18 (capital-scale damage) x 10 = 180] is applied to the target Hex B. The damage is then applied to adjacent hexes: 144 points of standard-scale damage are applied to every Hex 1 [18 (capital-scale damage) x 8 = 144]; 108 points of standard-scale damage are applied to every Hex 2 [18 (capital-scale damage) x 6 = 108]; 72 points of standard-scale damage are applied to every Hex 3 [18 (capital-scale damage) x 4 = 72]; 36 points of standard-scale damage are applied to every Hex 4 [18 (capital-scale damage) x 2 = 36]. No damage is assigned to hexes 5 or more away from the target hex. In all instances, the damage is divided into 5-point Damage Value groupings and assigned randomly.

Note that the Hardened buildings on Base Map #1 use Total Warfare classifications and the players are using the advanced rules building classifications from Tactical Operations*, which don't allow a "standard" building to be Hardened. As such, before play began, the players determined that since this is a military base, any Hardened building hex would be a Construction Factor 120 Hardened Fortress, while the "wall" of fortress building hexes around the base on top of the revetment would be Construction Factor 100 Hardened Fortresses.*

In the diagram, a Gallowglas *occupies the target Hex B. Not only will 180 points of damage be assigned to the 'Mech, but the Special 'Mech Hit Location Table (see p. 175, TW) is used, almost guaranteeing the 'Mech will be destroyed.*

In Hex C, a Grenadier *battle armor squad is located on the ground floor of the Construction Factor 15, Light, Level 2 building hex. As the building is neither a Fortress nor a Castle Brian, nor Hardened, it does not provide any protection and the full 144 points of damage are applied to the building and every trooper in the squad (the damage is multiplied by 2, as the orbit-to-surface attack is an area-effect weapon, for a horrific overkill of 288 points of damage). The building and the battle armor unit are completely destroyed; the hex is reduced to rubble.*

In Hex D, a building hex lies along the LOS between the target hex and the Archer *in Hex D, and the building hex is*



• ORBIT-TO-SURFACE ATTACK DIAGRAM •

higher than both the target hex and the height of the Archer. *However, the building does not block damage to the 'Mech because the orbit-to-surface attack reduces the building hex to rubble [108 (Damage Value applied to Ring 2 hexes from the target hex) x 2 (area-effect weapon) ÷ 2 (Fortress Classification) = 108; applied against the Construction Factor 100 Hardened Fortress destroys the building]. However, the two Level 2 hills intervening in the LOS do block the damage and so the* Archer *does not receive any. Even if the Terrain Factor Rules (see p. 64, TO) are in effect, damage to the* Archer *would still be blocked; neither the 144 points nor the 108 points of damage assigned to the first-ring Level 2 hex or second-ring Level 2 hex are enough to reduce either hex's 200 Terrain Factor to 0, instead reducing their levels by 1. If both Level 2 hills had received enough previous damage to reduce their Terrain Factor to 0 once the respective orbit-to-surface attack damage values had been assigned, thus reducing both Level 2s to Level 1s, then 72 points of damage would be assigned to the* Archer.

The Atlas *in Hex E is inside a Hardened Fortress, and so a portion of the damage that would normally be assigned to the 'Mech is absorbed by the building. After looking at the Buildings Classification and Type Table from* Tactical Operations *(see p. 115,* TO*), the players determine that the damage applied to such a building hex is divided by 2 (rounded down). The damage ultimately applied to the building is 72 [72 (Damage Value applied to Ring 3 hexes from the target hex) x 2 (area-effect weapon against building hexes) ÷ 2 (Fortress Classification) = 72]. More importantly, the damage applied to the Atlas is only 30 [72 (Damage Value applied to Ring 3 hexes from the target*

hex) –12 (current CF 120 ÷ 10) ÷ 2 (Fortress Classification) = 30]. As the damage is entering the Atlas*' left-side arc, it is applied in 5-point Damage Value groupings to the Left Side of the 'Mech Hit Location Table. Unless the player is extremely unlucky, the* Atlas *will easily survive.*

If the building in Hex E had been a 120 CF Castle Brian hex, the damage applied to the building would be 8 [72 (standard-scale damage applied to Ring 3 hexes from the target hex) ÷ 10 = 8 (7.2, rounding up to 8)]; the area-effect status of an orbit-to-surface attack doesn't apply to Castles Brian, and so the final damage is not doubled. The player then determines that the Castle Brian's current Damage Threshold is 12 [120 (current CF) ÷ 10 = 12]. As the capital-scale Damage Value 8 of the hit doesn't equal or exceed the Damage Threshold, a 10-point standard-scale attack is not delivered to the Atlas.

The VTOL in Hex F at Elevation 3 will still be damaged, as damage rises three elevations in Ring 2. The controlling player divides the 108 points of standard-scale damage applied to every Hex 2 to determine how much damage is applied to the VTOL. He comes up with 13 points of damage [108 (Ring 2 damage) ÷ 2 (Elevation 1) = 54 ÷ 2 (Elevation 2) = 27 ÷ 2 (Elevation 3) = 13.5 (rounded down to 13)].

The VTOL in Hex G is also at Elevation 3. However, since damage only rises two elevations in Ring 3, that VTOL will escape damage.

Finishing off the rest of the damage from the orbit-to-surface attack, the controlling player finds the following:

Because the building in Hex E was not reduced to rubble by the damage, and is higher than the target hex and the two adjacent building hexes in the Ring 4 hexes, no damage is assigned to those hexes.

The Construction Factor 15 of the Light Buildings in the second and third ring of hexes is well below the damage being applied; those buildings are immediately reduced to rubble.

The Terrain Factor of 50 for the Light Woods in the Ring 2 and 3 hexes is below the Damage Values of 108 and 72 respectively (even before multiplying those Damage Values by 2 because the orbit-to-surface attack is an area-effect weapon; see Clearing Woods*, p. 112,* TW*), and so they are reduced to rough hexes.*

The Hardened Fortress buildings making up the "wall" on the revetment (each with CF 100) in the Ring 2, 3 and 4 hexes receive damage of 108, 72 and 36 respectively. Like the other Hardened Fortress building in Hex E, because the orbit-to-surface attack is an area-effect weapon, those damages are doubled to 216, 174 and 72 respectively, but are then divided by 2 because of the buildings' Fortress classification, bringing the numbers back to their original values. Subsequently, all Ring 2 Hardened Fortress buildings are reduced to rubble, while any Hardened Fortress buildings in the fourth ring of hexes receive 36 points of damage.

The player notes with wry amusement that despite the 6 hexes of scatter, he just missed damaging the DropShip; even if he'd rolled a 5, the sheer scale of the orbit-to-surface attack would have enabled him to apply the Ring 4 damage to the DropShip.

If the Sovetskii Soyuz *fired a NAC/20 bay in a surface-to-orbit attack, striking the exact same hex, and the Terrain Factor Rules are in use (see 64, TO), the following would occur (the example assumes no damage has yet been applied to any terrain).*

The base Attack Value of the NAC/20 bay is 60 points of capital-scale damage, and so 600 points of standard-scale damage [60 (capital-scale damage) x 10 = 600] is applied to the target Hex B. The damage is then applied to adjacent hexes: 480 points of standard-scale damage are applied to every Hex 1 [60 (capital-scale damage) x 8 = 480]; 360 points of standard-scale damage are applied to every Hex 2 [60 (capital-scale damage) x 6 = 360]; 240 points of standard-scale damage are applied to every Hex 3 [60 (capital-scale damage) x 4 = 240]; 120 points of standard-scale damage are applied to every Hex 4 [60 (capital-scale damage) x 2 = 120]. No damage is assigned to hexes 5 or more away from the target hex.

Because a hex level is reduced by 1 for every 200 points of damage, the target Hex B (which began as a Level 1) will be reduced to a rough, Sublevel 2 hex. Each Ring 1 hex that began as a Level 0 hex will be converted into a rough, Sublevel 2 hex, while the Level 1 and Level 2 hexes in the first ring will be converted into rough, Sublevel 1 and Level 0 hexes respectively. Each Ring 2 hex that began as a Level 0 hex will be converted into rough, Sublevel 1 hexes, while the Level 1 and Level 2 hexes in that ring will be converted into rough, Level 0 and Level 1 hexes respectively. Each Ring 3 hex that began as a Level 0 hex will be converted into rough, Sublevel 1 hexes, while the Level 1 and Level 2 third-ring hexes will be converted into rough, Level 0 and Level 1 hexes respectively. Finally, each Ring 4 hex will not be reduced in level, as the 120 points of damage does not exceed each hex's 200 Terrain Factor.

Because the 360 points of damage (for Ring 2) and 240 points of damage (for Ring 3) applied to the buildings in the "wall" hexes automatically destroyed those buildings, they do not block any damage. Furthermore, because the target hex's underlying terrain began as Level 1, and the Level 2 hexes of Ring 2 and Ring 3 in the fortress "wall" have been reduced to Level 1 (meaning they are no longer higher than both the underlying level of the target hex and the hexes to be damaged), damage is now applied to those additional hexes beyond the fortress wall.

If any buildings in any damaged hex managed to survive, 10 standard-scale points would then be applied to each building hex for each level reduction.

Airborne-to-Surface Fire

Airborne-to-surface fire follows all the standard rules for orbit-to-surface fire (see p. 103), with the following modifications.

Apply to-hit modifiers for firing through atmospheric hexes, based on the altitude of the attacker (the attack does not pass through a Space/Atmosphere Interface Hex, so that modifier is not applied).

- Apply a +1 to-hit modifier for every point of velocity change by the attacker in the turn in which it makes the attack.
- Direct-Fire Ballistic Weapon attacks fired from Atmospheric Rows 4 or 3 arrive on the ground mapsheet during the Indirect Artillery Attack Phase the turn after they were fired. Direct-Fire Ballistic Weapon attacks fired from Atmospheric Rows 2 or 1, or from a Ground Hex, arrive on the ground mapsheet in the same turn they were fired.
- Missile attacks arrive on the ground mapsheet during the Indirect Artillery Attack Phase 1D6 turns after they were



• SURFACE-TO-ORBIT FIRING ARC DIAGRAM •

fired, –1 for each Atmospheric Row below the Space/Atmosphere Interface to a minimum of 0 (the controlling player makes the roll in secret, without announcing when the attack will arrive, and should write the turn number on a piece of paper and place it face down next to the playing area). If the die roll result is 0 (due to modifiers applied for the Atmospheric Row from which the attack was made), the attack arrives on the ground mapsheet in the same turn it was fired.

- Spheroid units can only launch an airborne-to-surface attack from weapons mounted in the Aft, Aft Left and Aft Right locations.
- Aerodyne units can only launch an airborne-to-surface attack from weapons mounted in the Nose, Left Wing and Right Wing locations.

Surface-to-Orbit Fire

Surface-to-orbit attacks follow all the standard rules for orbit-to-surface fire (see p. 103) with the following modifications.

- Attacks can only be made against a target in the surface-to-orbit firing arc (see the Surface-to-Orbit Firing Arc Diagram, above) and the weapon in question must be able to attack the target.
- To-hit modifiers for firing through atmospheric hexes do not apply for surface-to-orbit attacks (unlike WarShips, which are not designed for orbit-to-surface fire—though they can be used in such attacks—surface-to-orbit weapons systems are optimized for local atmospheric conditions).
- Direct-Fire Energy Weapon attacks arrive on the space mapsheet in the same turn they were fired.
- Direct-Fire Ballistic Weapon attacks arrive on the space mapsheet during the Indirect Artillery Attack Phase of the turn after they were fired; if the target has moved out of range since the attack was made, the attack automatically misses.
- For Direct-Fire Weapons only, apply a +1 to-hit modifier for every point of velocity change by the target, both in the turn the surface-to-orbit attack is made and in the turn when the attack arrives on the space mapsheet (other than for evasive action, which applies its own modifier; see p. 77, *TW*).
- Missile attacks arrive on the space mapsheet during the Indirect Artillery Attack Phase 1D6 turns after they were fired (the controlling player makes the roll in secret,

without announcing when the attack will arrive, and should write the turn number on a piece of paper and place it face down next to the playing area). If the target has moved out of range since the attack was made, the attack automatically misses.
- Only Large Craft can be the target of a surface-to-orbit attack.
- Tele-operated missiles used in surface-to-orbit attacks begin maneuvering in the Movement Phase (Aerospace) once they arrive on the mapsheet; they are placed on the first space hex immediately above the Space/Atmosphere Interface. Tele-operated missiles do not expend any fuel in the launch phase; they do so only once they begin to maneuver after being placed on the space map.
- Only a missile weapon may be launched from underwater. For every two full depths below the surface, apply a +1 modifier to the 1D6 die roll result to determine how many turns it takes to reach the space map, while also applying an additional +3 to-hit modifier.
- For a unit mounting a capital/sub-capital weapon that is making a surface-to-orbit attack, apply standard attacker movement modifiers.
- Landed spheroid aerospace units can only launch a surface-to-orbit attack from weapons mounted in the Nose, Fore-Left and Fore-Right locations.
- Landed aerodyne aerospace units cannot make surface-to-orbit attacks.

The controlling player of a Terran SDS base lofts a Barracuda missile at an orbiting DropShip (the DropShip is large enough for the missile to attack). The missile's Extreme range means it can travel up to 50 hexes, but each atmospheric hex fired through counts as 6 hexes and the Space/Atmospheric Interface hex counts as 3 hexes. Therefore, the first 27 hexes of the weapon's range are lost to the atmosphere, but this still allows the missile to travel another 23 space hexes. The player secretly rolls 1D6 with a result of 3; he writes that number down on a piece of paper and places it face down next to the playing area. During the Indirect Artillery Attack Phase of the turn when the missile arrives, the player turns the paper over to indicate the result, and then determines if he can hit the target. Despite the elapse of three turns, the target DropShip remains in the base's firing arc and is 5 hexes above the atmospheric interface. In effect, this means the target is 32 hexes from the launch site (27 for the atmosphere and 5 for space), placing it in the Long range bracket. This provides a final modified to-hit number of 6 [4 (Gunnery Skill Rating) + 4 (Long Range) –2 (missile modifier) = 6].

Airborne-to-Orbit Fire

Airborne-to-orbit fire follows all the standard rules for surface-to-orbit fire (see p. 109), with the following modifications.
- Apply to-hit modifiers for firing through atmospheric hexes, based on the altitude of the attacker.
- Apply a +1 to-hit modifier for every point of velocity change by the attacker in the turn in which it makes the attack.
- Direct-Fire Ballistic Weapon attacks fired from the Ground Row, or Atmospheric Rows 1 or 2, arrive on the space mapsheet during the Indirect Artillery Attack Phase the turn after they were fired; if the target has moved out of range since the attack was made, the attack automatically misses. Direct-Fire Ballistic Weapon attacks fired from the Atmospheric Rows 3 or 4 or the Space/Atmosphere Interface hex arrive on the space mapsheet in the same turn they were fired.
- Missile attacks arrive on the space mapsheet during the Indirect Artillery Attack Phase 1D6 turns after they were fired, –1 for each Atmospheric Row above the Ground Row to a minimum of 0 (the controlling player makes the roll in secret, without announcing when the attack will arrive, and should write the turn number on a piece of paper and place it face down next to the playing area). If the target has moved out of range since the attack was made, the attack automatically misses. If the die roll result is 0 (due to modifiers applied for the Atmospheric Row from which the attack was made), the attack arrives on the space mapsheet in the same turn it was fired.
- Spheroid aerospace units can only launch an airborne-to-orbit attack from weapons mounted in the Nose, Fore-Left and Fore-Right locations.
- Aerodyne aerospace units can only launch an airborne-to-orbit attack from weapons mounted in the Nose, Left Wing and Right Wing locations.

Surface-to-Surface Fire

Surface-to-surface attacks by capital/sub-capital weapons are horribly inaccurate and generally deemed terribly wasteful of these rare weapons, leaving the instances of such attacks very few and far between.

All the same rules that apply to an artillery attack (see *Artillery*, p. 179, *TO*) also apply to a surface-to-surface attack, with the following exceptions and additional rules.
- Only capital/sub-capital missiles may be used when making a surface-to-surface attack.
- The range in mapsheets of capital/sub-capital missiles is equal to their Maximum Range (see the Aerospace Weapon Range Table, p. 235, *TW*), plus 10 additional mapsheets for each Atmospheric Row they occupy above the Ground Row. For example, in the Ground Row, a Barracuda would have a maximum range of 50 mapsheets. However, if the unit mounting the Barracuda were at Atmospheric Row 4, the range would be 90 mapsheets [50 mapsheets (standard range) + 40 mapsheets (10 mapsheets per Atmospheric Row above Ground Row) = 90 mapsheets].
- Apply a +2 to-hit modifier.
- For a unit mounting a capital/sub-capital missile weapon that is making a surface-to-surface attack, apply a +1 to-hit modifier if the unit expended Cruising/Safe Thrust MP, or a +2 to-hit modifier if the unit expended Flanking/Maximum Thrust MP in the turn in which the attack is made.
- A surface-to-surface missile attack launched from underwater increases the artillery flight times (see Indirect Artillery Flight Times Table, p. 181, *TO*) by 1 turn and applies an additional +3 to-hit modifier.

ELECTRONIC WARFARE

Standard aerospace combat assumes that electronic combat measures between the participants—sensor probes, jamming and the like—cancel each other out. Players may wish, however, to incorporate this invisible warfare into their games to enhance the detail, albeit at the expense of complexity and speed of play. These additions only apply to space combat on a space map, not to atmospheric engagements or landed aerospace units.



Feng Huang-*class* Elias Jung *(House Liao)*

Construction: Military Small Craft and Large Craft ECM gear is an integral part of the structure of military aerospace units, not a design component. Civilian craft do not possess significant ECM gear.

Anti-Ship Electronic Warfare Missiles: If an ASEW missile (see p. 358, *TO*) successfully strikes an aerospace target, the unit loses its Electronic Warfare capability until the End Phase of the turn following the attack (multiple hits are not cumulative in any fashion).

Note: These ECM rules do not have any of the effects of any ground-based ECM system, and so do not affect any weapons and/or equipment in the same way as ground-based ECM systems.

Electronic Countermeasures (ECM)

All military aerospace units larger than a fighter have some form of electronic countermeasures to foil enemy targeting systems, though the ECM of larger units extend their influence over a greater volume of space and are less likely to be countered.

For every valid ECM hex (including that of the target and the attacker, if close enough) through which an enemy traces LOS in an attack, add a +1 to-hit modifier (to a maximum +4 modifier).

Fighters and Small Craft: Fighters only have an ECM field when they actually mount an ECM suite (for *Guardian ECM*, see p. 213, *TM*; for *Watchdog ECM*, see p. 278, *TO*; for *Angel ECM*, see p. 279, *TO*; for *Electronic Warfare Equipment*, see p. 310, *TO*). If a fighter mounts an ECM suite, it extends its ECM field over the fighter's own hex only.

Like Large Craft, a military Small Craft automatically generates an ECM field, but it only extends to the craft's own hex; a civilian Small Craft that mounts an ECM as described above for a fighter will generate an ECM field that covers its own hex. If a military Small Craft mounts an ECM suite as described above for a fighter, that equipment meshes with its automatically generated ECM field and will extend it to adjacent hexes.

Fighter/Small Craft ECM (regardless of whether or not the Small Craft mounts an ECM suite) only applies to other fighters and Small Craft, and is ignored by Large Craft.

When using the Fighter Squadron rules (see p. 27), if a single fighter within a squadron mounts an ECM suite, the entire squadron has an ECM field.

Large Craft: Military JumpShips and DropShips have an ECM field that extends into adjacent hexes, while WarShips and military Space Stations have an ECM field that extends 2 hexes from their location. A Large Craft's ECM field affects Large Craft as well as fighters and Small Craft. Civilian units cannot generate an ECM field.

Mounting an ECM suite, as described above for a fighter, on a Large Craft has no effect. Unlike a Small Craft, whose systems are compatible, the far more powerful Large Craft integral ECM systems are incompatible with any type of ECM suite; the Large Craft ECM is flat-out superior to that of smaller units and so supersedes the effects of an individual ECM suite.

Stacking and Maximum ECM Effects: No matter how many enemy ECM fields are active on the playing area, there is an upper limit to the interference they can impose. The maximum to-hit modifier generated by stacked ECM fields (regardless of Fighter/Small Craft/Large Craft ECM type, or the number of hexes) is +4. Any modifiers above +4, regardless of how many hexes of additional ECM modifiers that lie between the attacker and target, are ignored. If firing out of a hex affected by an enemy ECM field, count that hex in your to-hit modifier. Multiple ECM fields of the same class (generated by the same type of unit) in the same hex do not stack. For example, three Large Craft in a single hex only generate a +1 ECM to-hit modifier. However, a hex can have an active Fighter/Small Craft ECM and Large Craft ECM field at the same time. For example, a hex can have a +1 Fighter/Small Craft ECM field and a +1 Large Craft ECM field, both affecting fighters and Small Craft. If a fighter is attempting to shoot at a Small Craft or a Large Craft in this field, the fighter applies a +2 to-hit modifier, up to the maximum cumulative +4 to-hit modifier.

Electronic Counter-Countermeasures (ECCM)

The following rules below explain how Electronic counter-countermeasures are used in space combat.

Active Probes: Any fighter, fighter squadron or Small Craft equipped with an Active Probe (for *Beagle* and *Light*, see p. 204, *TM*; for *Bloodhound* and *Watchdog*, see p. 278, *TO*) or Electronic Warfare Equipment (see p. 310, *TO*), at the start of a scenario should designate whether the Active Probe is going to operate in the standard-scale Short Range band or Medium Range band (see Aerospace Weapon Range Table, p. 235, *TW*). If the Active Probe is operating in the Short Range band (6 hexes), the probe's effects cover all arcs out to the maximum standard-scale Short Range (6 hexes). If the Active Probe is operating in the Medium Range band, the probe's effects only cover the Nose arc of the carrying unit. During the End Phase of any turn, the play may announce a switch between the two range bands.

For any hex affected by the Active Probe, all friendly units ignore enemy ECM effects from fighters, fighter squadrons and Small Craft in those hexes. Additionally, such units can reduce the effect of Large Craft ECM by –2 (to a minimum of 0), per hex in the area of effect.

Fighters/Small Craft: A fighter with an ECM suite (as well as a military Small Craft, whether it mounts an ECM suite or not) can tune it to act as electronic counter-countermeasure (ECCM) in order to negate enemy ECM. The ECM loses its normal function when used in this way. The player must announce the switch to ECCM in the End Phase of any turn, or may set

the suite for ECCM at the start of the scenario. In either case, note the change on the record sheet of the unit in question.

Such an ECCM field can only counteract the effect of enemy ECM in the same hex as the fighter or Small Craft, but may negate all ECM bonuses for fighter/Small Craft in that hex (regardless of how many overlapping fields are present) and reduce Large Craft ECM field effects in the hex by –1. Note that a Small Craft's ECCM field extends out as far as its ECM fields, so a military Small Craft mounting an ECM suite would extend its ECCM field into adjacent hexes.

Fighter/Small Craft ECM-generated ECCM can only counteract the effects of a single Large Craft's ECM. As a result, if more than one Large Craft's field is present in a hex, the fighter/Small Craft ECCM will still be affected by other Large Craft ECM in the same hex.

Large Craft: Large Craft make an ECCM Control Roll at the start of each Weapon Attack Phase, reducing the effect of ECM on its attacks in that phase by –1 for every point of Margin of Success (MoS), to a minimum of 0. This is a straight roll, with no additional modifiers from the Control Roll Table (see p. 93,*TW)*.

A Large Craft does not lose its ECM effect when making an ECCM Control Roll; it can employ both effects every turn (unless the systems are damaged; see *Damaging ECM/ECCM*, below).

Effects of Naval C³

Each unit in a Naval C³ network (see p. 332, *TO*) may make an ECCM Control Roll. The highest bonus is shared among all the units in the network.

Damaging ECM/ECCM

A fighter's ability to generate an ECM/ECCM field is tied to the actual ECM suite or Active Probe. If a fighter's weapons take a critical hit in the location where the ECM or Probe is mounted, the ECM or Probe may be destroyed in place of the weapon (see *Weapon*, p. 240, *TW*).

Small Craft and DropShips reduce their ECM field size by one hex for each Sensor or FCS critical hit; if this drops below 0 hexes, the unit no longer generates an ECM field. For DropShips only, for every +1 to-hit modifier generated by a Sensor or FCS critical hit, add a +1 modifier to all ECCM Control Rolls.

WarShips, JumpShips and Space Stations reduce their ECM field size by one hex for each Sensor or CIC critical hit; if this drops below 0 hexes the unit no longer generates an ECM field. For every +1 to-hit modifier generated by a Sensor or CIC critical, add +1 modifier to all ECCM Control Rolls.

ECM and Bearings Only Launched Missiles

Bearings-only launched missiles (see p. 100) only count the ECM between the missile and the target unit. The effects of ECM on the firing unit do not affect the bearings-only missile.

ECM and Tele-Operated Launched Missiles

Tele-operated missiles are handled differently from standard weapon fire. A tele-operated missile can partially ignore the effects of ECM on the map. The link between the firing unit and the tele-operated missile can be maintained through a maximum of three hostile enemy ECM hexes without affecting targeting. However, if four or more ECM hexes (Large Craft and/or Small Craft) exist between the firing unit and the missile at any point during the missile's movement, control of the missile is lost.

For these rules, any ECM fields (regardless of how many) in the target hex are ignored.

In the ECM/ECCM Diagram on page 113, an SL-27 Samurai *fighter and an* Aurora*-class DropShip in Hex A are trying to target a civilian* Mule*-class DropShip in Hex J on the BattleSpace map (Joel wants to destroy the enemy's resupply ship). Both the* Samurai *and the* Aurora *in Hex A are 8 hexes away from the* Mule *in Hex J, firing at the nose, and both have Gunnery Skill Rating 4. As the target is at Medium Range from the* Samurai*, the fighter can only attack with its twin extended-range medium lasers. While the range is the same for the* Aurora*, the DropShip can fire its two Gauss rifles and two ER medium lasers from its nose, as well as two ER PPCs from its right wing.*

Before taking into account ECM/ECCM effects, the modified to-hit number for all attacks from both units is 7 [4 (Gunnery Skill Rating) + 2 (Medium Range) +1 (attack against nose) = 7]. However, there's a whole mess of ECM and ECCM action going on between the attackers and the target that will alter the target number.

Joel begins with the Samurai *fighter and starts to count along the LOS between the attacker and the target hex to find the ECM/ECCM effects.*

Hexes B and C are both clear of interference. An enemy fighter with an ECM is in Hex D, along with the ECM bubble of the enemy WarShip in Hex M, applying a combined total +2 modifier. Hex E then applies another +1 modifier for the enemy WarShip's ECM bubble.

Hex F would normally impose a +1 modifier for the WarShip's ECM bubble as well. However, the friendly Small Craft in Hex L is specially designed to mount an ECM suite, which is tuned to ECCM this turn and so cancels out the WarShip's ECM.

While the Small Craft in Hex L cancels out one Large Craft's ECM in Hex G, two enemy Large Craft ECM bubbles are affecting that hex (from the WarShip in Hex M and the DropShip in Hex K), resulting in another +1 modifier.

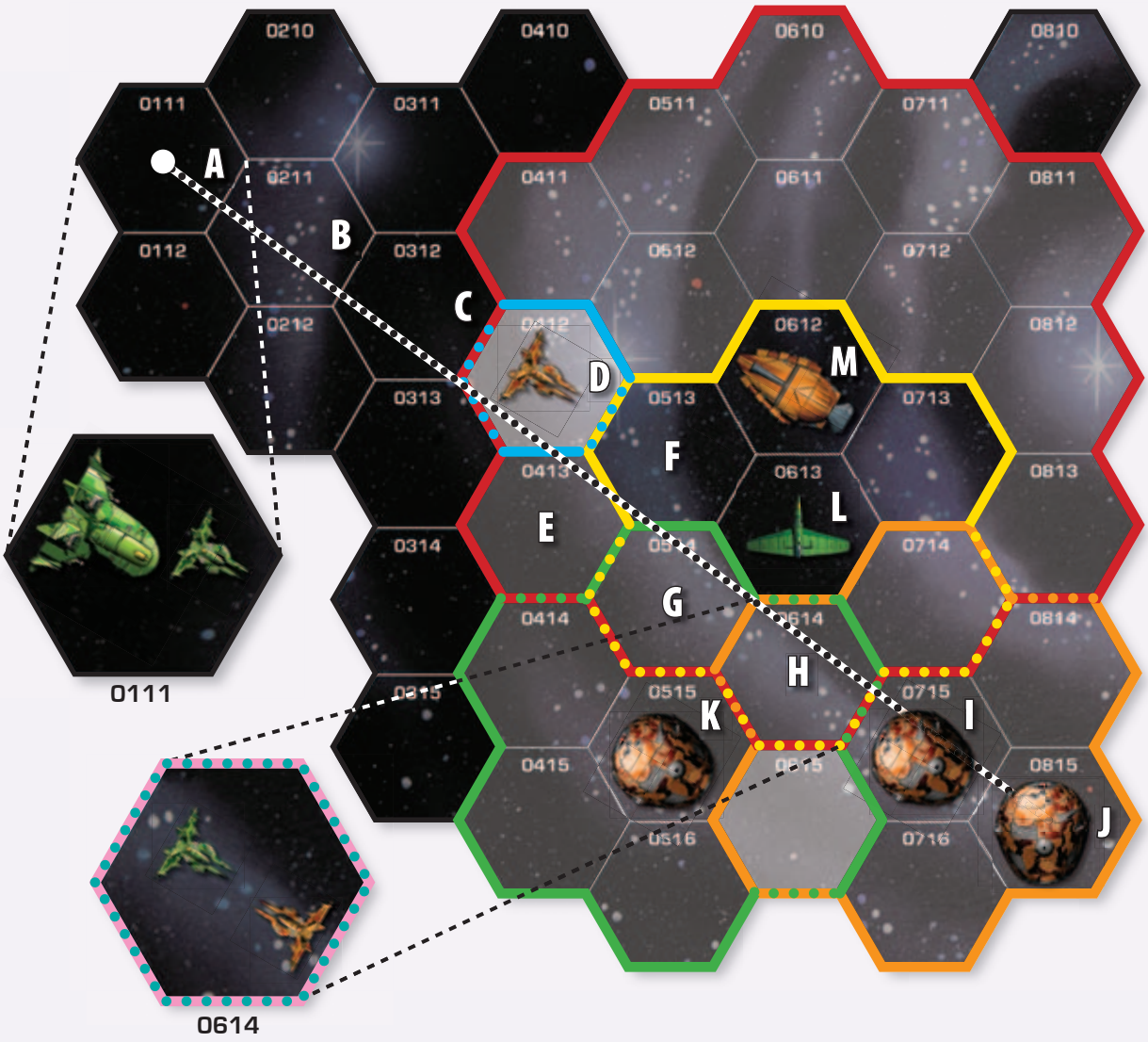
Hex H is a fantastic electronic fight. An enemy fighter with an ECM suite is there, as is a friendly fighter with an ECM system tuned to ECCM this turn, which completely cancels all fighter/Small Craft ECM in Hex H (the friendly Small Craft's ECM in Hex L does the same thing for Hex H, as it is tuned to ECCM, but it is not needed). The friendly fighter in Hex H along with the friendly Small Craft in Hex L cancel out two Large Craft ECM effects in Hex H. However, Hex H includes three enemy Large Craft ECM fields: the WarShip in Hex M, the DropShip in Hex K and the DropShip in Hex I. As a result, a +1 modifier is still applied.

A straight +1 modifier is applied for Hex D because of ECM from the DropShip in Hex I). Finally, a +1 modifier is applied for the enemy DropShip's ECM in Hex I that affects Hex J; the DropShip in Hex J is civilian and so does not inflict any ECM penalty of its own.

Adding up all the modifiers, the controlling player arrives at an additional +7. Luckily for Joel, ECM modifiers max out at +4, generating a final modified to-hit number of 11 for the Samurai.

Next, Joel takes the same approach with the Aurora.

Hexes B and C have no ECM effects. The Aurora*, as a Large Craft, can ignore the effect of the enemy fighter's ECM in Hex D, but must add the +1 for the WarShip's ECM in Hex M. Hex E applies another +1, again for the enemy WarShip's ECM in*



• ECM-ECCM DIAGRAM •

Hex M. No modifier applies for Hex F, as the enemy ECM from Hex M is canceled by the friendly Small Craft's ECCM from Hex L. Hex G applies only a +1 modifier, as the friendly Small Craft's ECCM in Hex L cancels out one of the two Large Craft ECM fields in Hex G.

Once again, as a Large Craft, the Aurora *ignores the enemy fighter in Hex F. As with the* Samurai*, the ECCM from the friendly fighter in Hex H and the friendly Small Craft in Hex L cancel out two of the three fields from the three Large Craft ECM affecting that hex, leaving a +1 modifier. Again, as with the* Samurai*, hexes I and J apply a +1 modifier each.*

That leaves a total modifier of +6, but the maximum ECM modifier is +4. Additionally, at the start of the current turn, the controlling player of the Aurora *made a successful ECCM Control Roll with a Margin of Success of 2. That generates a modified target number of 9 [4 (Gunnery Skill Rating) + 2 (Medium Range) +1 (attack against nose) + 4 (enemy ECM) – 2 (ECCM Control Roll) = 9].*

Joel realizes next turn he's got to get some more fighters and DropShips into the mix if he wants to fire at units across so many overlapping ECM fields.

EMERGENCY COMBAT HEADING OPERATION (DROPSHIPS AND WARSHIPS ONLY)

Through the emergency application of attitude and control thrusters, DropShips and WarShips can execute emergency heading changes in the thick of combat, allowing them to partially react to highly nimble smaller craft. The ECHO is akin to a BattleMech's torso twist.

At the end of the Movement Phase (Aerospace)—after fighters and Small Craft have completed movement—DropShips and WarShips may declare an ECHO (Emergency Combat Heading Operation) by expending 2 thrust points. The aerospace unit must have the required thrust points remaining for this maneuver. If the thrust points are available, the DropShip or WarShip may change its facing by one hexside in any direction.

Engaging in an ECHO makes it more difficult for that unit to make an attack, however. If the unit is only expending Safe Thrust, apply a +1 to-hit modifier to all weapon attacks; if expending Maximum Thrust, apply a +2 to-hit modifier.

A unit performing an ECHO may not take evasive action.

If using standard movement rules, the unit will revert to its original facing during the End Phase (just like a 'Mech's torso twist). If using Advanced Movement (see p. 64), the ECHO becomes the unit's new facing.

If using Rotational Vector (see p. 65), an ECHO only counts as +1 to the clockwise/anti-clockwise vector. It does not affect or apply to Yaw or End Over manuevers (see p. 66).

INDIVIDUAL WEAPONS

Aerospace combat rules use four fixed range bands to simplify the combat process, particularly in games involving dozens of units and hundreds of weapons. However, this mechanic negates the special characteristics of some weapon systems, and players may wish to use weapon-specific range bands. Doing so will radically alter how aerospace combat plays, likely slowing play considerably as players calculate to-hit modifiers and make rolls for each weapon in a bay.

Ranges for standard-rules weapons appear on pages 303-305 of *Total Warfare*, while ranges for non-capital, advanced and experimental weapons appear on pages 404-417 of *Tactical Operations*. Extreme ranges for standard-scale weapons in aerospace combat follow the same rules as ground combat (see *Extreme Range*, p. 85, *TO*). The ranges for capital-scale weapons appear on the Capital Weapons Detailed Ranges Table (see p. 115).

When using the Individual Weapons rules, each weapon in a bay may engage a different target. However, the targeting systems of these weapons are not designed for such fire, and each additional target beyond the first engaged by the weapons in a single bay applies a +1 to-hit modifier (cumulative) to all attacks by that bay. For example, the guns in a single bay engage three different targets, resulting in a +2 modifier to all attacks made by those weapons (+1 for each target after the first).

The total heat generated by all weapons fired, be they in bays or individually, must conform to the standard heat rules for the aerospace unit's size class–that is, Large Craft must not generate more heat than they can dissipate. When using the Individual Weapons rules, the unit may not fire a weapon if doing so would cause it to overheat.

Weapons that have variable fire rates (such as Ultra ACs and RACs) need not be fired at their maximum rate, which may reduce the heat generated and ammo consumed (and reduce the chance of jams), albeit at the expense of damage inflicted.

A side effect of individual weapon use is that individual standard-scale weapons may struggle to penetrate capital-scale armor; only a select few may inflict the 10 points of damage required to cause a point of capital damage. To reflect this, roll 2D6 whenever a standard-scale weapon strikes capital-scale armor. If the result is equal to or less than the number of standard-scale damage points inflicted, the strike causes capital-scale damage equal to the standard-scale damage divided by 10 and rounded up.

A Rapier *aerospace fighter is attacking an* Avalon*-class WarShip 14 hexes away. The controlling player decides to fire its AC/20 and a PPC. After checking his record sheet, the controlling player sees that the range of the AC/20 is 9 hexes. After checking the Extreme Range rule (see p. 85, TO), he determines that the Extreme Range of the AC/20 is 14 [9 (Long Range) x 1.5 = 13.5 (round up to 14)]; he's just in range! The controlling player is also firing the PPC, which has an Extreme Range of 27 [18 (Long Range) x 1.5 = 27)]; before the game begins, the players should have decided whether to use the extra hexes beyond 25 (see the Aerospace Weapon Range Table, p. 235, TW) or ignore them.*

After making two successful to-hit rolls, the controlling player determines damage. The AC/20 automatically inflicts 2 points of capital-scale damage (because the 2D6 roll result will always be less than the standard-scale AC/20 Attack Value of 20, it automatically causes capital-scale damage equal to the Attack Value of 20 divided by 10). The PPC, on the other hand, may inflict a single point of capital-scale damage only if the 2D6 roll result is 10 or less (equal to or less than the PPC Attack Value of 10).

LARGE CRAFT AND SENSOR SHADOWS

Even the largest intact aerospace units occupy only a fraction of the space of any given hex and so have little impact on the line of sight between combatants. Aerospace units that are close to other units may, however, claim some measure of concealment either due to physical obscuration or interference with sensors, creating a murky "sensor shadow."

Apply a +1 to-hit modifier to any weapon attacks against units in the same hex as an enemy Large Craft or with enemy Large Craft units in an adjacent hex through which line of sight is traced. If there is an enemy Large Craft in both the target's hex and the adjacent hex to the target along the LOS, apply a +2 to-hit modifier to any weapon attacks. In both instances, the adjacent Large Craft must not weigh less than 100,000 tons of the target (it can be any weight higher than the target), or the modifier does not apply. For example, an *Overlord*-class DropShip (9,700 tons) in the same hex as a *Hunter*-class JumpShip (95,000) would provide a modifier, as would a *Whirlwind*-class WarShip (520,000 tons) to an *Essex*-class WarShip (620,000 tons). However, neither the DropShip nor the JumpShip would provide any modifier for either WarShip.

Fighters (or fighter squadrons), Small Craft, lifeboats and escape pods, as well as capital missiles, do not obscure line of sight, nor do multiple enemy units in the same or an adjacent hex increase the to-hit modifier.

Sensor shadows are only applicable on the Space Map (or the space portion of a High-Altitude Map).

Electronic Warfare: Sensor shadows can be used with Electronic Warfare rules (see p. 110). However, due to the powerful nature of such combined rules, all players should agree to their use before play begins.

Tele-Operated Missiles

Tele-operated missiles may move some distance off-axis between their launching unit and target, enabling the tele-operated missile to see units lurking in the "shadow" of the target. As such, they ignore sensor shadow target modifiers.

Advanced Sensors

If players are using the Advanced Sensors rules (see p. 117), the Large Craft and Sensor Shadows rules allow the controlling player to attempt to spoof enemy Detection Checks.

If a unit would receive a to-hit modifier as described above, apply those modifiers (+1 or +2, as appropriate) to any Radio

CAPITAL WEAPONS DETAILED RANGES TABLE

Type	Heat	Short Range	Medium Range	Long Range	Extreme Range
Direct-Fire Ballistic Weapons					
Light Mass Driver	30/60	1–10	11–20	21–30	31–40
Medium Mass Driver	60/100	1-9	10-18	19-27	28-36
Heavy Mass Driver	90/140	1-8	9-16	17-24	25-32
NAC/10	30	1-11	12-22	23-33	34-44
NAC/20	60	1-11	12-21	22-31	32-42
NAC/25	85	1-10	11-20	21-30	31-40
NAC/30	100	1-9	10-18	19-27	28-36
NAC/35	120	1-7	8-14	15-21	22-28
NAC/40	135	1-6	7-12	13-18	19-24
Light N-Gauss	9	1-14	15-28	29-40	41-56
Medium N-Gauss	15	1-13	14-26	27-39	40-52
Heavy N-Gauss	18	1-12	13-24	25-36	37-48
Light SC-Cannon	12	1-7	8-14	15-21	22-28
Medium SC-Cannon	30	1-6	7-12	13-18	19-24
Heavy SC-Cannon	42	1-5	6-10	11-15	16-20
Direct-Fire Energy Weapons					
NL35	52	1-11	12-22	23-33	34-44
NL45	70	1-12	13-24	25-36	47-48
NL55	85	1-13	14-26	27-39	40-52
Light NPPC	105	1-11	12-22	23-33	34-44
Medium NPPC	135	1-12	13-24	25-36	37-48
Heavy NPPC	225	1-13	14-26	27-36	40-52
SCL1	24	1-9	10-18	19-27	28-36
SCL2	28	1-8	9-14	15-19	20-24
SCL3	32	1-7	8-13	14-18	19-22
Missile Weapons					
Killer Whale	20	1-12	13-24	25-36	37-48
White Shark	15	1-12	13-24	25-36	37-48
Barracuda†	10	1-20	21-30	31-40	41-50
AR10*	*	*	*	*	*
Sub-Capital					
Manta Ray	21	1-3	4-5	6-7	8-9
Swordfish	15	1-3	4-6	7-9	10-12
Stingray	12	1-6	7-12	13-18	19-24
Piranha	9	1-9	10-18	19-27	28-36
Tele-Operated‡					
Kraken-T	50	N/A	N/A	N/A	N/A
Killer Whale-T	20	N/A	N/A	N/A	N/A
White Shark-T	15	N/A	N/A	N/A	N/A
Barracuda-T	10	N/A	N/A	N/A	N/A
Equipment					
Screen Launcher	10	1-3	4-6	7-9	10-12

*Per missile type †If using weapon-specific ranges, Barracuda missiles do not gain a to-hit bonus. ‡Tele-operated missile (see p. 251, *TW*)

Triangulation (see p. 118), Drive Plumes (see p. 119), Radar (see p. 119) or Optical/Thermal (see p. 119) Detection Checks.

A DropShip engages an enemy DropShip in the same hex. Attacks by other aerospace units from either side against the combatants suffer a +1 to-hit modifier, as both are Large Craft. A fighter squadron in an adjacent hex likewise gains a +1 to-hit modifier for any attacks against it that pass though the hex containing the two DropShips. The DropShips do not gain any protection from the fighters because those units are too small to obscure the larger vessels.

OVER-PENETRATION WEAPONS FIRE TABLE

1D6 Roll	Result
1-3	All units apply standard damage
4	JumpShips and Space Stations apply over-penetration rules*
5	JumpShips, Space Stations and DropShips apply over-penetration rules*
6	WarShips with an original SI 30 or less and any JumpShips, Space Stations or DropShips apply over-penetration rules*

*All other units apply standard damage.

OVER-PENETRATION WEAPONS FIRE

Large Craft encompass a considerable volume of "empty" space: open passages, cargo bays, self-sealing tankage (water, sewage, fuel) and so on. In combat, these spaces provide little resistance to incoming fire and can allow a powerful weapon strike to pass through a vessel nearly unimpeded.

Each time a weapon inflicts damage to a Large Craft's SI, roll 1D6 and consult the Over-Penetration Weapons Fire Table (see above) to determine if the damage strikes through one of these "empty volume" regions. If the attack indicates it hit one of these sections, thus passing through the entire ship, then DropShips and WarShips only assign 1 point of SI damage, and no SI damage is assigned to a JumpShip or Space Station. In all instances, any remaining damage is assigned to the armor in the location opposite the incoming attack. Any damage remaining is lost.

As with standard SI damage, roll for a critical hit.

A Jade Falcon Fredasa *fires with its NAC/40 on a Lyran* Invader*-class JumpShip. The attack hits, doing 40 points of damage. After blotting out the 7 points of armor on his fore-left facing, the* Lyran *player rolls 1D6. Rolling a 4, he consults the table and finds that the damage over-penetrated his fragile JumpShip. He marks off the 7 points of armor on his fore-right arc and the 7 points of armor in his aft-left arc, and then rolls a critical hit, but the Invader is still alive and ready to be shot at again next turn.*

SPACE BOMBING

Single fighters (not squadrons) may be loaded with bombs while on a Large Craft with Small Craft/fighter bays, while in space, for use against ground targets and against Large Craft in space. Rules for atmospheric bombing appear in *Low-Altitude Operations* (see p. 80, *TW*). To bomb a target on the space map, the following conditions must apply:

- Both the bomber and its target must occupy space hexes.
- The target must be in a hex the bomber passed through on the turn of the attack (including the hex in which it ends the turn). Resolve the attack during the Weapon Attack Phase of the turn in which the fighter passed through the target hex.
- The fighter must have its nose aligned with its direction of travel (or with its largest vector if using the Advanced Movement rules; see p. 64). Standard atmospheric bombing rules apply, except as follows:
- Fighters may only dive-bomb their targets.
- The base to-hit number is the pilot's Gunnery Skill Rating +4.
- Apply a +1 to-hit modifier for every point of velocity change by the target in the turn in which it is attacked (other than for evasive action, which applies its own modifier; see p. 77, *TW*).
- Apply a +1 to-hit modifier for every point of velocity change by the attacker in the turn in which it makes the attack.
- A +1 to-hit modifier applies for every 10,000 tons (or part thereof) the target masses under 100,000 tons.
- The target of a space-bombing attack must mass at least 10,000 tons or higher.
- Apply the immobile –4 to-hit modifier if the target is a Space Station or a Large Craft that has a destroyed engine, even if it still has a velocity (i.e. is drifting).
- Missed bombs do not scatter and do not hit other targets.
- Only HE, cluster and laser-guided bombs or non-homing Arrow IV may be used. However, the three bomb types all function as HE bombs, inflicting 10 points of standard-scale (1 point of capital-scale) damage, applied in 50-point (5-point capital-scale) groups. Arrow IV inflicts 20 standard-scale points (2 capital-scale points) of damage but also has a chance of an automatic critical hit like capital missiles (Critical Hit Chance 11+; see p. 239, *TW*).
- Bombs only affect the targeted unit.
- TAG has no impact on space bombing.
- Called Shots Mode (see p. 100) cannot be used with space bombing.
- Fighter squadrons (see p. 27) use modified rules for bombing and external ordnance.

A fighter equipped with 8 HE bombs opts to attack a Space Station with its weapons. The controlling player changed the fighter's velocity by 2 so that its movement takes it through the target station's hex (a requirement of the bombing attack), giving the fighter a +2 to-hit modifier for the 2 points of velocity change. The modified to-hit number is 6 [4 (Gunnery Skill Rating) + 4 (bombing attack modifier) + 2 (attacker thrust expenditure) –4 (Space Station) = 6]. The die roll result is an 11, a success; the damage is applied as a 50-point standard-scale (5-point capital-scale) and a 30-point standard-scale (3-point capital-scale) hit.

In the same turn, another fighter attempts to bomb a WarShip in its path. The fighter doesn't need to change its velocity, but the WarShip changed its velocity by 3, so the modified to-hit target number is 11 [4 (Gunnery Skill Rating) + 4 (bombing attack modifier) + 3 (target thrust expenditure) = 11].



A pair of Skibinski's Salvage Stingrays *begin a space bombing run against a military facility located on an asteroid.*

TARGETING CAPITAL MISSILES

Aerospace units may choose to forgo normal weapon fire during the Weapon Attack Phase in order to target a capital/sub-capital missile (including tele-operated missiles) that has yet to reach its target (in essence they're turning themselves into a point-defense weapon; see p. 96). The missile must have passed within six hexes of the attacking unit during the Movement Phase of the turn in which the attack will be made (even if the missile is no longer within that six-hex range). In addition to all standard modifiers, apply a +3 to-hit modifier and double all angle of attack modifiers; the range is always considered Short.

Large Craft: If a Large Craft fires any weapons in an arc at a capital missile, no other targets may be attacked by any other weapons in that arc that turn.

Aerospace Fighters and Small Craft: If aerospace fighters or Small Craft target a capital missile, they cannot make any other weapon attacks against any other targets that turn.

Atmospheric Hexes: If the target missile is located in an atmospheric hex, apply an additional +2 to-hit modifier.

VARIABLE DAMAGE THRESHOLDS

In standard aerospace combat rules, the Damage Thresholds of each unit are fixed during construction, equal to one-tenth of the starting Armor Value on the facing, and they never change. This mechanic simplifies and speeds up the game, but does not reflect the steady degradation of armor and the protection it offers as battles progress.

Players may decide to have a unit's Damage Threshold vary as it takes damage, reflecting the increased chance of critical damage as a unit is denuded of its armor. In this case, the Damage Threshold of a unit's facing is equal to one-tenth of its current Armor Value, rounding fractions up. Tracking armor degradation in this way requires additional bookkeeping, recalculating the Damage Threshold whenever a target unit takes damage, but it also increases the lethality of aerospace combat.

An Aegis*-class WarShip has 101 armor points on each of its fore and aft sides and thus a starting Damage Threshold of 11 points (rounded up). After taking 1 point of damage, those facings would have their Damage Threshold reduced to 10 (100/10; another 10 points of damage would reduce the Damage Threshold to 9 (90/10).*

ADVANCED SENSORS

The following rules provide a method of incorporating advanced sensor suites into aerospace combat. They assume that any military craft will not be emitting an identifying IFF signal, will be operating under EMCON (EMission CONtrol, or radio silence) orders, and will be using its integral ECM and ECCM to their best effect (see *Electronic Warfare*, p. 110). Broadcasting an IFF signal means other aerospace units can detect the unit automatically (provided those aerospace units are within range of the IFF signal; see *Radio Triangulation (Object)*, p. 118).

The targets of sensor attempts fall into three categories: undetected, objects (which are visible to the sensors but cannot be directly attacked) and firing solution (which may be attacked directly). The header for each sensor method indicates the category of detection it produces. Only active radar can provide a firing solution to allow direct attack against a target, but an attacker may employ bearings-only capital missile attacks against any detected aerospace unit in range, relying on the missile's own sensor suite to provide the detailed targeting information (see *Capital Missile Bearings-Only Launch*, p. 100).

Detection Check: All Detection Checks are Control Rolls, using the pilot/crew's Piloting Skill Rating as the base target number, unless specifically stated otherwise in the following rules.

Active Probes: If a unit mounts an Active Probe (for *Beagle* and *Light*, see p. 204, *TM*; for *Bloodhound* and *Watchdog*, see p. 278, *TO*) or Electronic Warfare Equipment (see p. 310, *TO*), apply a –2 modifier to any Detection Check to detect a given unit.

Large Craft and Sensor Shadows: The use of Large Craft and Sensor Shadows rules can modify the Detection Checks described below (see p. 114).

Naval Comm-Scanner Suite: Double the maximum sensor range for a Small NCSS and apply a –1 modifier to any Detection Check to detect a given unit; triple the maximum sensor range for a Large NCSS and apply a –2 modifier to any Detection Check to detect a given unit (see p. 332, *TO*).

Note: Many of the following rules deal with a scale well outside the standard play that might be encountered in a scenario. Additionally, to best capture the flavor of the fog of war as it applies to the vastness of space, a third neutral party may be useful to act as a gamemaster for some situations. As with all sections of this book, players should thoroughly read these rules before determining which they will use and how best to implement them in their games.

INFRARED JUMP SIGNATURE (OBJECT)

The detection of an incoming JumpShip from its IR signature depends on the length of time a unit takes to make the jump and its DropShip capacity. The formula to determine jump duration is provided on page 89, though the unit's IR signature is detectable for double the jump time prior to the unit's appearance in addition to the jump duration. If a JumpShip or WarShip carries no DropShips, assume a capacity of 1 for these calculations. This IR signature is clearly visible to any units within 50,000 kilometers that have functioning sensors, but requires a Detection Check with a +1 modifier per 10,000 kilometers of distance between the two ships.

EMERGENCE WAVE (OBJECT)

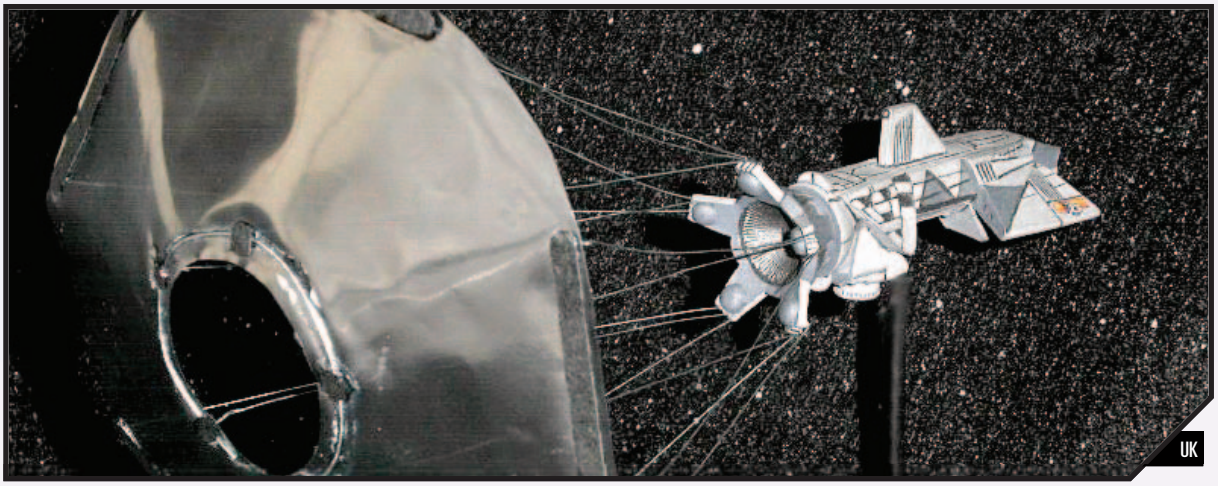
The appearance of a JumpShip/WarShip warps space and annihilates the gas and space dust at the unit's destination, triggering a burst of EM radiation known as the emergence wave. While detectable at a greater distance than the IR jump signature, this signal is harder to separate from background noise. Any military Large Craft may attempt to detect an arriving JumpShip/WarShip. The controlling player makes a Detection Check with a +2 modifier, as well as an additional modifier equal to half the distance from the arriving JumpShip/WarShip in AU (1 AU is approximately 150 million kilometers). Apply a further modifier by subtracting the incoming unit's full K-F Drive integrity + its DropShip capacity, divided by 10, to generate a final modified target number for the Detection Check. Round all fractions up at each stage. Each detecting unit may make a single Detection Check against an arriving JumpShip. Regardless of the final modified target number, it is not possible to detect any target beyond 15 AU.

Note: The electromagnetic pulse travels at the speed of light (299,800 kilometers per second) and will take approximately eight minutes to travel 1 AU.

RADIO TRIANGULATION (OBJECT)

Appropriately equipped units within range may detect radio and HPG communications. Civilian units may detect any radio transmissions within 500,000 kilometers. Military units can use their ESM to detect communications transmissions out to 10 million kilometers.

HPG transmissions use K-F hyperspace principles to send a message. After sending the message, the K-F field collapses, creating an electromagnetic pulse similar to an emergence wave, though much weaker. The HPG emergence wave rules allow triangulation of such emergence points, with the following changes: assume a +0 modifier for drive integrity and DropShip capacity, but double all range modifiers.



A McKenna*-class WarShip deploys its solar sail after arriving in system, sweeping the depths of space with its sensors for hostile ships.*

DRIVE PLUMES (OBJECT)

Any Large Craft may detect the drive exhaust plume of any moving unit. The plume, seen as a moving bar or point of x-rays and light, provides information on heading, velocity and distance to the target unit. The Detection Check base target number for detecting the moving unit is 5, with a modifier of +1 for every 5,000,000 kilometers of distance (or part thereof). The distance limitation does not reflect a limit on how far a unit can see, but rather the distance at which the motion of the target unit becomes apparent. Each unit may make one Detection Check against each opposing unit per hour (60 space turns).

RADAR (OBJECT)

Any Large Craft with a functioning sensor system (one not destroyed through critical damage) may attempt a Detection Check against objects within 100,000 km (5,555 space hexes). The radar systems of fighters and Small Craft are less powerful, and may only detect targets out to a range of 10,000 km (555 space hexes). When making a Detection Check, apply a modifier equal to the range/10,000 (for Large Craft) or range/1,000 (for fighters and Small Craft), rounding up. Apply any modifiers, as appropriate, for any sensor damage. Once detected, an object remains detected while within the detecting aerospace unit's sensor range. Each unit may make one Detection Check against each target per hour (60 space turns).

Battlefield Radar (Firing Solution)

The aerospace combat rules assume the combatants are using radar to detect and target their opponents. To reflect this, players may wish to determine if an aerospace unit detects a particular target. Assuming its radar is active, the aerospace unit automatically detects any targets within 1/10 of the unit's normal radar range, 10,000 km (555 space hexes) for Large Craft or 1,000 km (55 space hexes) for fighters, Small Craft and capital missiles. Beyond that range, the players must make a Detection Check, as described under *Radar (Object)* above, in each turn immediately before firing. An aerospace unit not detected in this manner may not be fired on directly, but may be targeted by capital missiles (which have their own sensors) using a bearings-only launch (see *Capital Missiles Bearings-Only Launch*, p. 100).

Electronic Support Measures (Object)

Military Large Craft automatically detect any aerospace units within 1,000,000 km that are using active radar. Civilian aerospace units, as well as military fighters and Small Craft, lack the ESM systems needed to detect the radar emissions and so may not use this detection method. ESM detection is not sufficient to allow the detecting aerospace unit to fire directly at the target, but does allow the firing of capital missiles on a bearings-only launch (see *Capital Missiles Bearings-Only Launch*, p. 100); players can use the High Speed Closing Engagement or Bearings-Only Launches Not Directly on the Playing Area rules to resolve these situations**,** depending on whether mapsheets are in use.

OPTICAL/THERMAL DETECTION (OBJECT)

All aerospace units are equipped with optical-based sensors, from the most basic digitally enhanced optical telescopes to thermal-enhanced imaging and x-ray telescopes. These sensors allow the detection of drive plumes at considerable ranges. At the battlefield level, their ability is more limited. Resolving a small object such as an aerospace fighter, or even a two million-ton *McKenna*, in the vastness of space can be very difficult.

Any Large Craft with a functioning sensor system (one that has not been destroyed through critical damage) may attempt a Thermal/Optical Detection Check against objects within 25,000 km (1,388 space hexes). The telescopic systems of fighters and Small Craft are less powerful, and may only detect targets out to a range of 2,500 km (139 space hexes). The Detection Check applies a modifier equal to the range/2,500 (for Large Craft) or range/250 (for fighters and Small Craft), rounding up. Apply modifiers as appropriate for any sensor damage. Once detected, an object remains detected while within the detecting aerospace unit's sensor range. Each unit may make one Detection Check against each target per hour (60 space turns).

Optical/Thermal detection beyond 139 space hexes (for Large Craft) or 14 space hexes (for Small Craft/fighter) is not sufficient to allow the detecting aerospace unit to fire directly at the target, but does allow the firing of capital missiles on a bearings-only launch (see *Capital Missiles Bearings-Only Launch*, p. 100). Players can use the High Speed Closing Engagements (see p. 74) or Bearings-Only Launches Not Directly on the Playing Area rules (see p. 101) to resolve these situations**,** depending on whether mapsheets are in use.

Battlefield Thermal/Optical Detection (Firing Solution)

The aerospace combat rules assume the combatants are using radar to detect and target their opponents, but units may attempt to use thermal or optical sensors. These sensors have the advantage of passive operation, but have shorter ranges than active radar. To reflect this, players may wish to determine if an aerospace unit detects a particular target. Using thermal/optical sensors, the aerospace unit automatically detects any targets within 1/10 of the unit's normal thermal/optical range: 2,500 km (139 space hexes) for Large Craft or 250 km (14 space hexes) for fighters and Small Craft. Beyond that range, the players must make a Detection Check as described under *Optical/Thermal Detection (Object)* above, in each turn immediately before firing.

ZERO-G GROUND UNIT COMBAT

The following rules build on the Zero-G Ground Unit Movement rules (see p. 24), allowing such units to enter combat.

Ground units can be employed in aerospace engagements, though they make poor space combatants. Such units may only engage units in the same hex (they lack the targeting systems of aerospace units) and suffer a +4 to-hit modifier for all weapon attacks (because they treat all attacks as being at long range). Other units may attack them as if they were fighters. Battle armor may not use anti-personnel weapons in space combat, and infantry platoons reduce their damage

to 25 percent of normal. All attacks made by ground units target their opponent's front facing. Attacks against such units by aerospace units in the same hex determine the facing randomly. Roll 1D6. On a result of 1–3, the attack is against the front. On a 4, it is against the side (randomly determine which side), and a 5 or 6 indicates the rear. Use standard ground unit rules to determine the location of the hit.

All units must adhere to the Vacuum rules when involved in zero-G combat (see p. 54, *TO*). The following additional rules also apply.

BATTLEMECHS

- A jump jet hit reduces available Thrust by 1. Fuel reserves remain unchanged.
- The unit ignores all Movement Point modifiers while in space (but they apply when making a landing roll).

WEAPON ATTACKS

Once a unit is landed on the enemy aerospace unit (see p. 24), the target unit's weapons may not attack the ground unit.

For targeting and damage purposes, the landed ground unit is assumed to be on the aerospace unit in the location corresponding to the hexside from which it entered. For example, a unit entering through the nose hexside is in the Nose location. If the aerospace unit moved into the ground unit's hex, determine the location randomly. During the Movement Phase (Aerospace), a landed ground unit may move to an adjacent location, but it may not make any attacks during that turn (for example, from Nose to Fore-Right on a DropShip).

The landed unit may make an attack against that location of the aerospace unit's armor, or may make a direct attack on critical systems. All weapon attacks are automatically successful (no to-hit roll required; all cluster weapons automatically deal their full Attack Value), but must be converted from standard- to capital-scale if the targeted unit is a JumpShip, WarShip or Space Station. Physical attacks may also be used against armor, with the following stipulations: only punch, kick and physical weapon attacks may be made, and must still adhere to their standard rules (for example, an arm carrying a physical attack weapon cannot deal damage with it if a weapon from that arm is fired in the same turn).

Targeting critical systems requires a to-hit roll (short range for 'Mechs and ProtoMechs, Anti-'Mech Skill for infantry). The target system may be any in the appropriate location (for example, if the ground unit is on the aerospace unit's nose, any hit location on the Nose, Aft or Side column of the Aerospace Units Hit Location Tables prefixed by Nose/). If the total damage caused by all the successful hits of a single ground unit (including any physical attacks) exceeds the Armor Threshold for the location, a critical hit may occur on the targeted system. Determine if critical damage occurs using the standard rules (see p. 238, *TW*). Attacks aimed at causing critical hits do not inflict armor damage, irrespective of their success or failure.

Control Rolls: If the target aerospace unit makes a Control Roll, as the result of damage or high-thrust maneuvering, the landed ground unit must do so also, applying all landing modifiers apart from No Fuel (see p. 25). Failure indicates that the ground unit has been thrown off the hull of the aerospace unit, traveling in the same direction and velocity as the aerospace unit when it was thrown. Provided the unit still has reaction mass (fuel), it may maneuver normally in the following turn (see *Movement*, p. 24).

Docked or Grappling Units: Any aerospace units either docked (see p. 66) or docked/grappled as part of a boarding action (see p. 36) to the aerospace unit where ground units have landed may target those ground units normally (and be the target of attacks by such ground units), provided they are both in the same location. In such an instance, use the Attacks by Grounded Aerospace Units rules (see p. 249, *TW*), with the following modifications:

- Randomly determine whether a landed ground unit is in the left side or right side arc of a friendly docked DropShip for firing arcs and attack direction. In the case of a docking/grappling aerospace unit, this may require some adjudication, depending on which location of the boarding aerospace unit is connected to the unit it is attempting to board (see *Docking and Grappling*, pp. 199, *TO;* and 36). For JumpShips/WarShips/Space Stations, the arc should be readily apparent, as they maintain the same heading and orientation as the aerospace unit to which they are docking; randomly determine the location if there is any doubt. In all instances, this orientation remains the same as long as any ground units remain in the same location. For example, if two ground units are landed on a WarShip in the same location as a docked DropShip, and the random roll determined that the combat will be resolved on the left side of the DropShip, that location will be used as long as either unit is in the same location. If both ground units move to another location on the WarShip and then return, a new location (left or right side, for example) would be rolled.
- All damage to ground units is applied to the Front Hit Location Table.
- All attacks are considered to be at long range.
- Any attacks against the landed unit that miss automatically hit the aerospace unit where the ground unit is landed, causing damage normally.

Defending Troops: Ground units carried either by the aerospace unit on which the enemy ground units have landed or—in the case of larger aerospace units—any ground units carried by friendly aerospace units docked to the parent aerospace unit can exit such an aerospace unit to fight the landed enemy units on the surface of the ship. Use the Dismounting rules (see p. 91, *TW*), to exit such troops, with the exception that any number of infantry can exit a JumpShip/WarShip/Space Station; no door limitation applies.

In all such instances, players should lay out a standard ground mapsheet with the blank side up (representing the hull of the aerospace unit), placing the attacking landed ground units in the center of the map, without violating stacking rules. If all players agree, the map can actually be a ground map, or a randomly created urban map with all buildings being considered impassable, as the hull of a massive aerospace unit can be just as contoured and filled with obstacles as any ground map. The defending units randomly determine which edge of the playing area they should enter; if units are simultaneously arriving in the location

on the hull from two different sources (for example, from a JumpShip and a docked DropShip), they should enter from different sides.

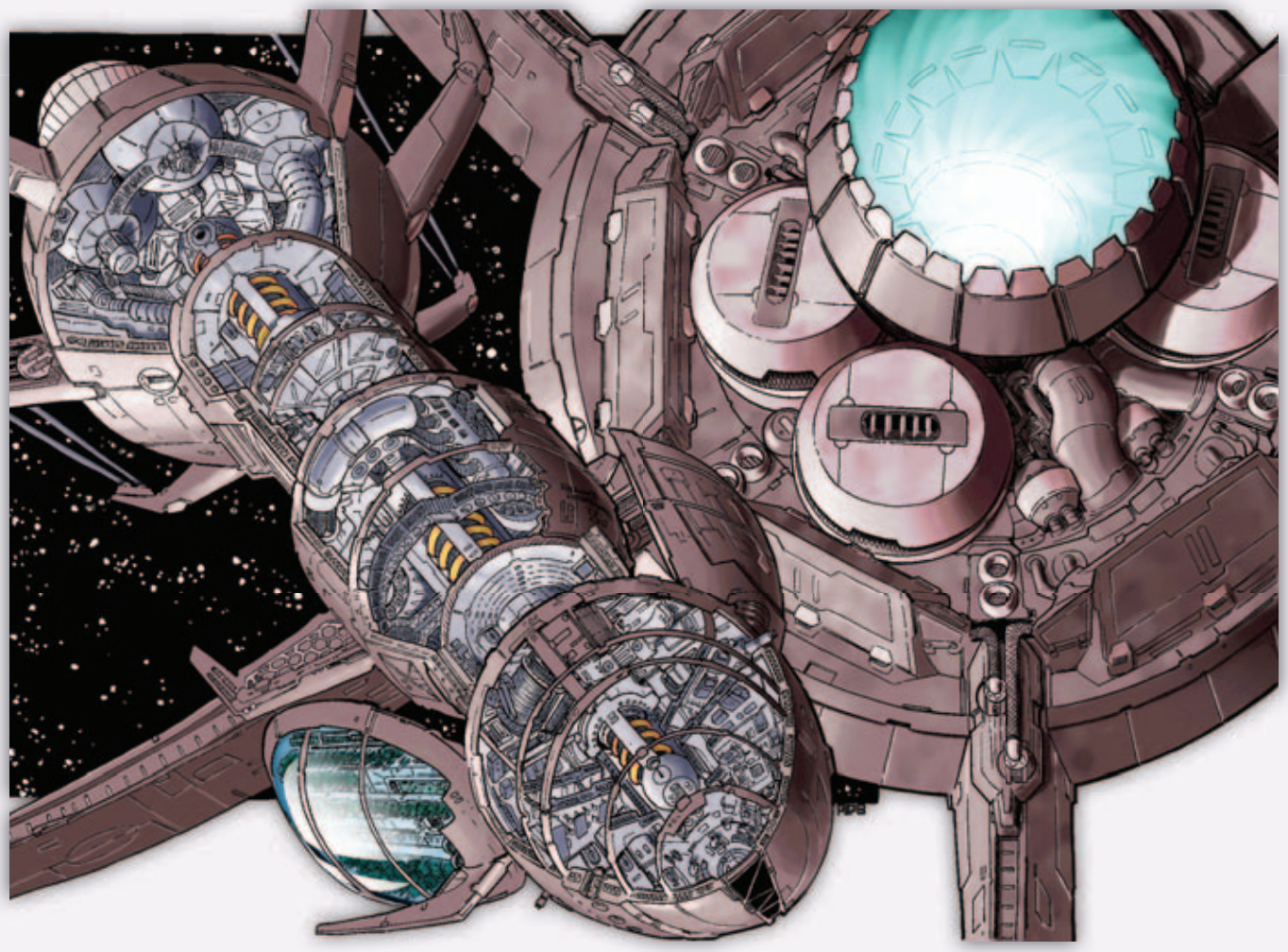
The game is then played as a standard ground combat game, with all the rules in this section for vacuum and operating in zero-G in effect. Remember that one space turn represents six ground turns, so six turns of ship surface combat between ground units would be played for each space turn involving the rest of the units in the aerospace game.

If the number of units involved is large enough, players may wish to use more than one map to play on (see *Selecting Mapsheets*, p. 264, *TW*, for guidelines on the ratio of maps to units).

A valiant Combine GHR-5J Grasshopper *lands on a Snow Raven* Essex*-class WarShip. Having arrived through the Aft-Right hexside, it is in the Aft-Right location on the WarShip's hull. Its objective is the vessel's K-F drive, which may only be targeted in the Nose (Nose/K-F Drive), Front-Right or Front-Left (Front Side/K-F Drive), or Aft (Aft/K-F Drive) locations—pretty much anywhere except where the 'Mech landed. The* Grasshopper*'s player spends his next Movement Phase maneuvering into the Aft location, but cannot make any attacks that turn. During the Weapon Attack Phase of the following turn, the player then attempts to attack the K-F drive core. The player fires all weapons, which automatically strike the target: ER large laser, 2 medium lasers and a Streak SRM-2, for a total Damage Value of 22. However, the controlling player of the* Grasshopper *knows that with an aft Armor Value of 35, the* Essex *has a Damage Threshold of 3.5 (35 points of standard-scale damage). He therefore throws in a kick (for an additional 14 points of damage), giving him 36 points of damage, just enough for a possible critical hit. The player rolls 2D6 to determine if he inflicts critical damage on the K-F drive, but the result is a 7, no critical. He now must hope to survive any maneuvers the* Essex *may use to dislodge him, so he can try again next turn.*



A Wyvern *and* Lancelot *have made the desperate gamble to board a WarShip, while the defending vessel deploys its own 'Mech forces to battle on its surface.*



AEROSPACE TECHNOLOGIES

—Tharkad University lecture broadcast at the Lloyd Marik-Stanley Aerospace School. Used With Permission.

Oh, interesting. More people showed up for this half of the lecture. Did your friends message you that Dr. Readly's flashy WarShip presentation was going to begin? Well, I hate to disappoint you, but I'm not Dr. Readly, and he's saving all the dramatic holos for when he returns. To the newly arrived students, I'm Assistant Professor Dietrich Mathers, and I'm stuck talking about the boring features of transportation technology. Well, I do have some colorful holos, but they're mostly of space stations and some obscure bits of JumpShip architectures. Speaking of JumpShips, let's start with those.

AEROSPACE VEHICLES

JUMPSHIPS

Without JumpShips, humankind would still be stuck in the Terran system. Or, mostly stuck there. The fusion motors developed by the Magellan program probably could've gotten humankind to the stars in a reasonable period for one-way missions. Anyway, faster-than-light starships were invented in the 22nd century when Terran Alliance scientists revisited the scorned physics postulates of Thomas Kearny and Takayoshi Fuchida, almost eight decades after those two visionaries were laughed out of the scientific community for their ideas. Personally, I think Kearny and Fuchida should've gotten a second look because of their key contributions to workable fusion power plants, but they were challenging some very solid Einsteinian dogma of the time. I mean, we still use big chunks of Einstein's theories today.

Anyway, a JumpShip is laid out like a long, slender needle. This shape is a result of the Kearny-Fuchida drive system. The core of the drive is a meters-thick titanium-germanium core that stretches from one end of the vessel to the other and is wrapped in a liquid helium jacket to keep it at the correct operating temperatures. Usually, a proportionally small habitat and bridge are at the ship's bow while the stern houses the massive station-keeping drive.

The Kearny-Fuchida drive is what makes the JumpShip do what it does. It allows the craft to instantly "jump" between two points in space up to thirty light-years apart, hence the name JumpShip.

Though the station-keeping fusion drive of JumpShips is often substantially more massive than the drives of most DropShips, it is proportionally a smaller fraction of the JumpShip's mass, leaving JumpShips barely able to maneuver in comparison to DropShips. Don't let that fool you; JumpShips can putter around star systems when they need to. But in combat, they're almost stationary targets. In fact, today only the unspoken prohibition against destroying these rare and vital spacecraft keeps them safe and interstellar travel flowing. That ban stemmed from the early Succession Wars, which were all too successful in destroying JumpShips, though with the coming of the Clans and now the Jihad that ban is starting to wane.

JumpShips have several features in common: engineering systems, weapons, control systems, grav decks and cargo areas. I'll get to those in a moment, after I frame those systems with an obligatory historical overview that Dr. Readly wants… though, honestly, can you get through your primary and secondary schools without knowing most of the major JumpShip dates?

JumpShip History

I won't take long with this. The Deimos Program began in 2102 and resulted in the first jump by a vessel, an unmanned probe, in 2107. The following year, Raymond Bache became the first human to travel through hyperspace when he made a similar in-system jump. The TAS *Pathfinder* made the first interstellar jump, to Tau Ceti, in the same year. Colonization plans were drawn up immediately thereafter, but it took until 2116 for the TAS *Ark* to deliver the first colonists to New Earth. The TAS *Charger*, the first military JumpShip, was built in 2122.

JumpShip technology was refined steadily throughout the 22nd century, allowing increases in range every few decades until the modern thirty-light year limit was reached in the early 23rd century. At the same time, recharge times dropped steadily as drive durability and energy storage efficiency improved, all of which cut down travel times almost to modern limits. However, those old ships were still slaves to enormous quantities of hydrogen for recharging, which led to the introduction of the "jump sail" at about the same time JumpShips were reaching their thirty-light year limit.

The next revolution involved the compact core, which appeared right around the dawn of the 24th century…my notes say 2300 C.E. on the dot. I say "revolution," but the compact core was really an evolution of existing trends in K-F core design—early JumpShips used smaller cores than today. The standard core, which I'll get to in a moment, was a result of cost-saving trends in JumpShip design. Anyway, despite a few attempts by civilians to harness the weight-efficient compact cores, these K-F drives are so exclusively used by militaries that any compact core vessel, armed or not, is referred to as a WarShip.

Shortly after the compact core was introduced, various JumpShip designers began pushing in another direction: stripping JumpShips down to the bare minimum K-F drive, even externalizing cargo using extensions of the K-F core, the so-called K-F booms that reached into DropShips. Until that point, JumpShips had served as both starship and in-system transport for their payloads. They would make the jump and then the transit to planetary orbit, where large shuttles would "drop" out of vast internal bays to deliver cargo groundside. The shuttles that evolved to handle the huge payloads of early JumpShips were thus unofficially named "DropShips" by their crews. Over time, JumpShips were streamlined to remain at jump points while DropShips handled transit to planetary orbit—merchants found no sense in paying for redundant numbers of large drives. At that point, DropShips were "dropping" free of JumpShips upon arrival into a system, rather than dropping from orbit.

Naturally, the militaries of the Inner Sphere first made use of the modern JumpShip/DropShip combination. The modern docking collar had evolved by the 25th century, allowing DropShips to easily plug in and drop off from JumpShips like super-sized cargo containers, and the name "DropShip" became official. No longer did JumpShips need to be customized for different cargos—that became entirely the problem of DropShips. The result was our current system of JumpShips and DropShips.

Since the 25th century, there have been few dramatic advances in JumpShip technology, and certainly the fall of the old Star League stagnated further developments in K-F drive technology.

Engineering Systems

"The heart of the JumpShip is the Kearny-Fuchida hyperspace drive." I think I said that already, but it's here in my notes…Anyway, the K-F drive is composed of an alloy of titanium and germanium…I said that before, too. And I said this part about the liquid helium…Okay, here's the new stuff. The super-cooled titanium-germanium core of the drive acts like a giant capacitor, which stores the energy needed to rip holes through space. It also serves as a big…oh, call it an antenna, to focus and tune the hyperspace field created by the initiator.

JumpShips have one of two types of cores. Most of the JumpShips out there—and I mean 99.9 percent of JumpShips today—use the so-called standard core. This cost-effective core can normally only transport about twice its mass through hyperspace (plus its own mass), so the JumpShip built around it is pared down to a minimum. A typical standard-core JumpShip is 95 percent K-F drive in terms of mass.

The remaining 0.1 percent of JumpShips, usually called WarShips even when they're unarmed, uses a compact core about half the mass of the JumpShip. This efficient core can carry six times its own mass through hyperspace. I mean, the drive's own mass plus five times more.

Where was I…right. The field initiator. Stuck in the stern of the JumpShip, this piece of equipment starts the jump by forming a hyperspace field. It kicks the field to the core, which then shapes and expands the field to hopefully encompass the whole JumpShip and properly docked DropShips. Everyone and everything else nearby tends to get mangled, since the drive controller isn't aware of them. The initiator is stuck at the aft end of the JumpShip to keep it away from the life support systems and most of the crew, because the initiators of early JumpShips—those of the 22nd and 23rd centu-

JUMPSHIP 'PIGEONS'

Interesting little fact. On some Star League-era models of JumpShips, famously including the *Chahar Profit*, the field initiator—or some modular, redundant components of it—were designed to be detached and perform a jump without the rest of the JumpShip, forming a distress beacon system known colloquially as a pigeon. The technology for this "free initiator jump" has been lost and I don't think JumpShip crews or designers are particularly weeping about its passing.

Anyway, the pigeon was a complete "Hail Mary" option at the height of its use in the 26th century before common sense and HPGs squeezed it out of service. The systems rarely worked well because the field initiator didn't have a core to properly form a field, though the Pigeons themselves could usually deliver a distress call even if they arrived as a mangled ball of garbage. But even then, removing chunks of a K-F drive didn't leave the parent JumpShip in any shape to jump, especially after the Pigeon jumped away with parts of the parent drive. It had the compounding problems of being extremely expensive, usually driving up the cost of a K-F drive by half; often damaging the power systems of its parent ship; and taking away parts from the K-F drive that might be needed to make the drive work again.

You might start to think "But professor, a Pigeon could still mean the difference between stranding and rescue, so are those problems really so bad?" Take a moment and consider those problems, one by one. The cost impact of the Pigeon was greater than an HPG—you could have better communications for less expense in the old Star League, which was the death knell of the Pigeon in the 27th century. The Pigeon lacked a core, which means it needed power from another source, the parent ship, and the process of diverting jump-level power to something off the ship usually damaged the JumpShip's electrical system, blowing relays and power cells, which could worsen the JumpShip's predicament. And the Pigeon wasn't a standalone emergency beacon, it was part of the ship's K-F drive. A healthy drive might spare the Pigeon's components, but you didn't use a Pigeon if you had a healthy drive.

Thus, even if Pigeons were still possible today the idea is less popular now than ever, because crews prefer to try to get their whole ship to jump, and modern attackers either just destroy the JumpShip or, most often, leave it alone.

An interesting little fact about this interesting little fact is that Pigeons can safely jump relatively near other ships because of their tiny hyperspace fields, and do not inhibit the formation of hyperspace fields because they lack a core to manipulate and shape such fields. So please disregard the urban legend that Pigeons were suppressed because they could somehow "interdict" jump points and thus bring interstellar travel to a halt. They died off because they were obsolete and risky. Also, take a moment to think about jump points. They are huge things. The entire outer reaches of a star system beyond the proximity limit, all the way into deep interstellar space, is a valid region for jumps. "Point" is often a misnomer. The numbers of K-F drives needed to interdict that space is effectively infinite.

ries—had trouble handing off the field to the core, so sometimes you'd see the field initiator making a jump without the rest of the ship. Though it tended to take the engineering section with it... but anyway, that made for a good reason to stick the crew in front. After all, it's not like they're in front because they need windows to see where they're going.

Charging

Energy. Generating and expanding the hyperspace field takes gobs of energy. Recharging the K-F drive usually takes seven to ten days, depending on the star used, and that process often requires a near-perfect photovoltaic collector—the so-called "solar sail"—about a kilometer in diameter. In addition to sending the JumpShip into another star system, this energy input is used to adjust the JumpShip's velocity to match the velocity of the destination jump point and to annihilate any matter at the destination.

I'm supposed to talk about the fusion drive here, but I already mentioned it…except for the fuel. If you're curious, JumpShip fusion rockets use hydrogen for fuel and reaction mass, just like most other spacecraft. They typically carry a few hundred tons. While this engine can recharge the drive, oddly enough, not many JumpShips actually carry enough hydrogen to pull this off. If you need to quickly charge off your engine, you better hope you're carrying some DropShips with spare hydrogen or that there's a recharge station nearby.

Solar sails, also called jump sails: same thing. Big disks of light-collecting material just fractions of a millimeter thick, coated with photochemicals that respond to all significant electromagnetic wavelengths produced by stars. They're soot black and hardly reflect anything, not even radar, so it's not unusual to hear about some small craft flying through the sail of a JumpShip, especially when the sail's navigation beacons and reflective strips are in poor shape. Sails are only deployed when a JumpShip is parked at a jump point because any real acceleration will rip them apart. The advantage to sails is that they give JumpShips almost limitless endurance and greatly accelerated human colonization when they were introduced in the 2200s. The first sails were giant arrays up to 50 kilometers in diameter, but they have shrunk considerably to an average of about 1 kilometer. These giant foils typically take about 80 minutes to deploy and 160 minutes to retract, and each operation carries the risk of tearing the fragile sails.

At a standard jump point, jump sails dangle under the JumpShip facing the star, pulled down under by their own weight. Yes, weight. The zenith and nadir points aren't in orbit, hence the station-keeping drives that keep JumpShips from plummeting into stars. (The fall typically takes years or even decades, but spacers love to frighten novices with the risk of stellar incineration.) Solar sails offer no propulsion to speak of—they're not real sails, and light pressure is usually much weaker than stellar gravity at standard jump points. And before you ask, the solar wind is even weaker than light pressure. So all those flashy pictures of JumpShips with billowing sails and roaring engines? Those are just JumpShips holding station with the sails drooping under them, trying to avoid plummeting into the local star.

A few Inner Sphere JumpShips and a lot of Clan JumpShips pack a system known as a lithium-fusion battery. This reactor stores a lot of energy that can be dumped to power a second jump moments after a first. As cool as it'd be, though, it's not feasible to

METEORITE DEFENSE

A great majority of defense against minor space debris is provided by the magnificent materials that clad modern spacecraft. A typical transit from jump point to planet will entail a peak velocity of small percentages of light speed, which means any speck of dust would be a vicious threat. And if space dust is mean, "space pebbles" and "space gravel" are very serious threats.

Natural debris in space is not made of materials as impressive as modern manmade armors. Icy specks are the norm in the outer system, bits of rock dust, or soft carbonaceous chondrites would definitely lose any normal contest against hull materials if it were not for their extreme speed. Just like lead bullets can punch through harder, stronger steel when propelled to high velocities by gunpowder, and just like the paper wadding of "blank" gun cartridge can punch through a skull at short range, fragile space debris colliding with a fast-moving spacecraft can rip through the strongest of materials.

The preferred means of dealing with space debris is to avoid it. Bigger debris—gravel-sized and larger—can be spotted by radar and avoided except by the fastest-moving spacecraft.

After avoidance comes deterrence: shooting the debris before it gets to the spacecraft. A relatively small amount of energy input from a laser will evaporate most micrometeorites and will ablate enough material from slightly larger bits to deflect them—action-reaction isn't limited to purpose-built rocket nozzles. For this reason, spacecraft tend to be dotted with low-output lasers.

Those lasers might blind an unprotected human, but otherwise they won't do more than scorch your skin or burn the paint on a spacesuit…are spacesuits painted? Anyway, space debris is, like I said, not exactly tough stuff and most of it is smaller than a fleck of paint—smaller than the fleck of paint or skin the lasers would burn off you. Owing to various arms control laws, occupational safety regulations, and paranoid governments, the standard anti-micrometeorite laser is thus not a serious threat to space-suited humans but significantly reduces the maintenance expenses of spacecraft.

Of course, the lasers and dodging aren't perfect solutions, which means armor still ends up playing the primary role in protecting ships from debris.

mount more than one lithium-fusion battery on a ship. A quick double-jump isn't good for a K-F drive, so standard practice is to space out the jumps every few days. Over the long haul, this still amounts to a doubled rate of travel.

The lithium-fusion battery is charged much like a K-F drive, and the K-F drive and lithium-fusion batteries cannot be charged simultaneously from one power source. You'll need a second power source—sail, fusion engine, or recharge station—to charge the lithium-fusion battery and K-F drive simultaneously. If you use one power plant to sequentially charge the drive and battery, you'll lose your doubled movement rate over long distances.

Quick Charging

Speaking of charging, let me clarify something here about the fusion power plant and other power sources for JumpShips. There are basically three ways to recharge the K-F drive: using the solar sail to collect sunlight or to receive a beamed microwave transmission from a recharge station; using a direct cable connection to a recharge station; or using the JumpShip's own fusion engine. And you know what? Any of those can fry a K-F drive. It's not just a fusion engine that can damage the drive. A recharge station can quick-charge your JumpShip, but doing so can fry the drive, too. Solar sails at bright stars, or in positions closer to stars than standard jump points, can also fry the drive. You've got to watch that inverse square law about sunlight. Example: a habitable planet for a yellow is about ten times closer to the star than the jump points. If you deploy your sail there, you can get one hundred times the power input. That'll let you charge the drive in about two hours by sail, but there won't be much drive left to use, so it'd be wise to keep the sail power converter output throttled down in a bright system—you don't have to let in every joule from the sail, after all. The flip side to this is that any power source that takes a sufficiently long time will not risk drive damage. It's just as safe to use a fusion engine as a solar sail if you take about 175 to 180 hours during charging.

Weapons Systems

Okay, I can get this one over quickly and get us back on schedule: JumpShips don't carry weapons. Oh, you'll see a couple of "anti-meteor" popguns on some ships that can scorch the armor on a fighter, but most JumpShips don't bother. That's because if they start shooting at something that can shoot back, the JumpShip usually loses. I've heard the Clans do different, but I'm not sure why they would. And, for the record, real anti-meteor defense is performed by little "weapons," laser emitters smaller than pistols that are a standard spacecraft feature and that can't puncture a combat space suit, so take the *Invader*-class JumpShip's claims to pack a pair of PPCs or lasers for "anti-meteor" purposes with a grain of salt. The *Invader*'s just being silly and trying to invite a serious attack.

Control Systems

You already know that the ship's controls and crew quarters are in the nose bubble of JumpShips. The bridge is kind of interesting. In micro-G operations and even milli-G station-keeping, you can arrange control stations at all sorts of angles. A lot of JumpShip designers like the idea of clustering crew together for quick interactions rather than satisfying planet-based psychological needs of a constant "up" direction, so you'll see some crew stations on the "roof" of the bridge, over the heads of other stations. When the JumpShip fires up its station-keeping drive to a higher level of power, alternate crew stations on the "floor" need to be used.

JumpShip bridges are generally larger versions of DropShip bridges, though they do have to address hyperspace navigation. Incidentally, should the nav computer fail, it's possible to manually calculate jumps, at least from standard jump points. (I say "manually," but trust me, the navigator will be burning out a hand noteputer's battery.)

Grav Deck

Most large JumpShips (100,000+ tons) have a gravdeck that…you know, I'm running short on time. I'll address gravdecks when I get to space stations. No need to be redundant.

Cargo Section

Standard JumpShips are too optimized to carry a lot of cargo. They'll carry a few hundred or thousand tons, but most cargo capacity is left to DropShips. The cargo that a JumpShip carries is generally for its own needs, like spare parts, food and extra fuel. It's not very efficient to store commercial cargo on a JumpShip, since you still need a DropShip to carry the goods to market. I've seen some interesting papers about compact core freighters showing good profit margins, but today that's just theoretical nonsense given the rate shipyards and WarShips are being blown up. That might've been different during the original Star League, but I'm not sure non-standard core freighters did well in the face of the all-dominating standard core/DropShip combination even then. So the way most JumpShips haul cargo is with their docking collars, in the form of DropShips.

WARSHIPS

WarShips. I bet you're hoping I'll say a lot about these awesome military leviathans, aren't you?

Unfortunately, there's not a lot more to say about WarShips that I didn't cover while talking about JumpShips. They use a more compact, efficient K-F drive that can haul a substantial amount of integral spacecraft systems in addition to the typical DropShip payload. With that carrying capacity, they mount bigger fusion drives that allow DropShip-like maneuverability, armor that can shrug off small nuclear weapons and guns as massive as DropShips that fire mammoth projectiles traveling at tens and hundreds of kilometers per second.

While a JumpShip pares itself down to a bare minimum, a WarShip has enough mass and volume to bury core systems deep in its interior. The K-F drive still runs the length of the ship, but is hidden behind layers of armor, decks and secondary systems.

Speaking of decks, I've noticed some of Kaumberg's armchair admirals have been proposing fanciful super-battleships that the Lyran Alliance should build to drive the League and Blakists out of our space. Never mind how incredibly expensive and difficult it is to set up a shipyard, and never mind the WMD-magnet Kaumberg would become if we hosted such an exercise. Remember Alarion, folks? Most of these people reveal the shortcomings of their own knowledge when they portray WarShips with long, horizontal decks, as if a WarShip is a wet navy vessel that just lifted into the sky on fusion rockets. No, sorry. You need to remember that "down" for a WarShip under thrust is in whatever direction its engines are pointing, and "up" is where the nose is pointing. WarShips are built like space-going skyscrapers, with dozens and even hundreds of decks built perpendicular to the K-F drive core.

This of course begs the question of why WarShips, when viewed from the exterior, have viewports that suggest an interior perpendicular orientation to the direction of travel, like wet-navy vessels. That, students, is a classic example of every navy across the known universe being the most hide-bound institution in existence. There are naval customs that stretch across millennia all the way back to the age of sail on Terra. Why should construction be any different? When the first WarShips took flight, the navy and its centuries of tradition insisted that the viewports remain perpendicular to the vessel itself. Now from the interior, this orientation has no bearing. A viewport is a viewport, regardless of its size or shape. Only from the exterior do the un-initiated become confused over why a "skyscraper" has viewports that make it look as though its decks should be perpendicular rather than horizontal. Even as factions refitted their WarShips through various "Block I", "Block II", "Block III" upgrades, and so on, across the centuries (often resulting in a silhouette of later Blocks bearing little resemblance to the original vessels of the same name) this design philosophy remained true. An oddity more firmly entrenched in naval construction than any religious dogma.

Incidentally, this interior arrangement is why few WarShips will carry DropShips under thrust. DropShips are built to make transits from jump points to planets anyway, and depending on how they dock to a WarShip, their decks may end up at very odd angles when the WarShip is accelerating. Not to mention the risk of tearing off at the docking collar—DropShips are tough, but not all of them are meant to dangle from their docking collars.

Anyway, there are a couple of reasons for the long, somewhat narrow shape of WarShips rather than adopting a structurally efficient spheroid shape, like the experimental Fox hull form. The K-F drive is one; it still dominates WarShip shaping. The other is a matter of defensive architecture. A slender WarShip aimed head-on at its foe hides most of its critical systems behind the full depth of bow armor and tens, even hundreds, of meters of top—or front, in other words—decks. Furthermore, the narrow frontal profile maximizes the thickness of a given weight of armor. These benefits go out the door in the normal broadside engagements between WarShips, but again, WarShips aren't water-going naval vessels. Unless they have a pressing reason to use their engines in another direction, they can usually pivot to keep their bow toward a threat. It's not like a frictionless vacuum is going to force them to "sail" nose-forward.

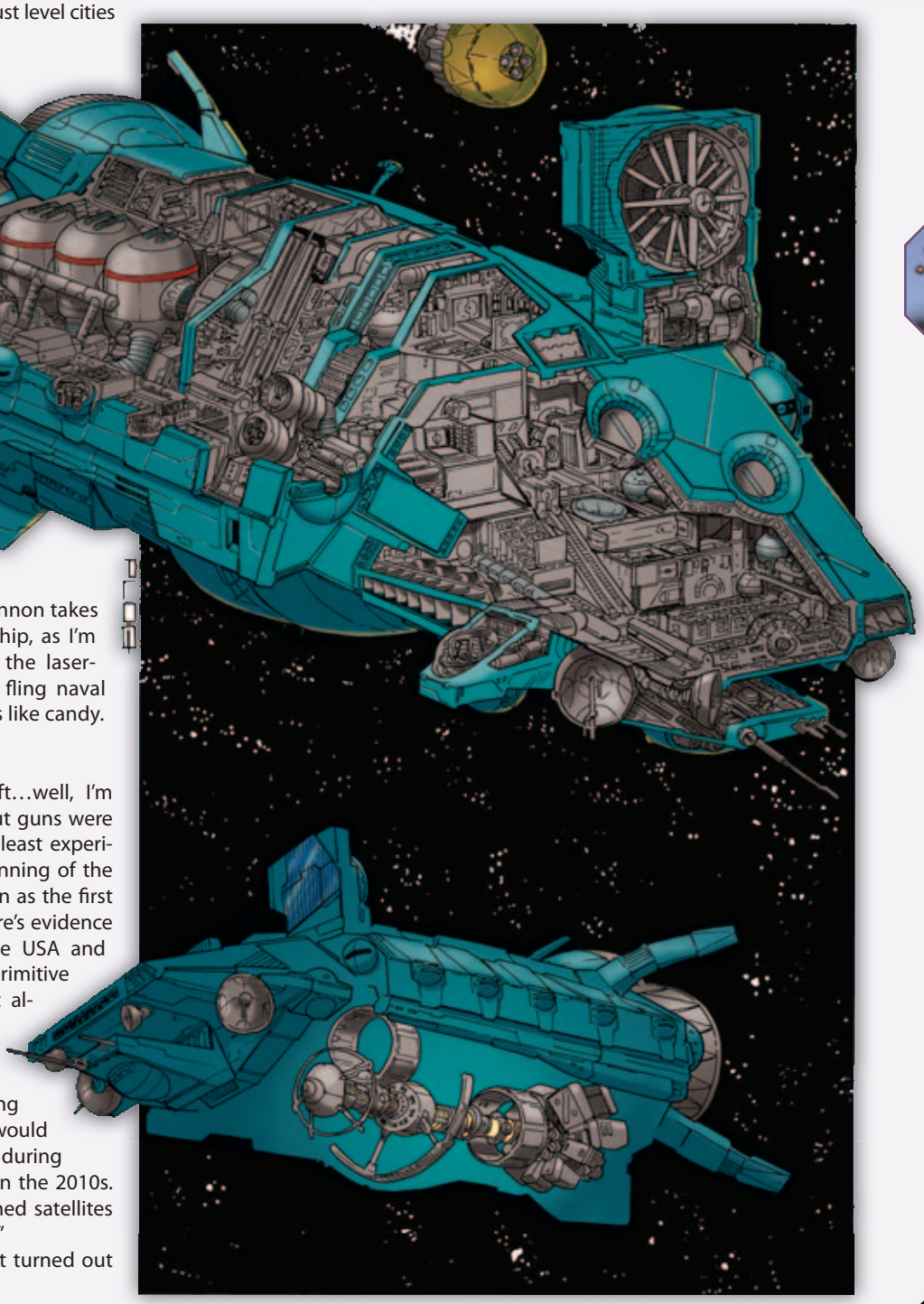
Another advantage to a long, slender layout is that you can pack more guns along those long sides than in the bow. In fact, a majority of WarShips are optimized for broadside engagements. The *McKenna* and *Black Lion* classes are notable examples. Unlike the archaic "Age of Sail" broadside engagements that often entailed two forces moving in parallel columns to trade fire, WarShips often select a heading toward a foe to shorten range and thus improve accuracy, begin coasting, pivot to present a broadside toward a foe, then trade fire during the approach. If damage gets too heavy on one side, they can roll to present the undamaged broadside. If they pass the target before destroying it, they have the backward-aimed broadside ready to continue shooting until the captain decides to reverse heading. That sort of approach could be performed with nose and stern weaponry, too, but any flip to present a ship's stern toward the foe sharply increases the chance for engine damage.

Instead, nose and stern armaments are more often used by ships seeking a fleeing foe, or by ships trying to avoid combat by thrusting away from battle. You might that note that some ships, like the *McKenna* and *Aegis*, do have more stern weaponry than bow—if they can't engage broadside, they're probably trying to run away.

What other differences from JumpShips are there? Well, WarShips tend to have much larger cargo bays than JumpShips. The Star League was truly silly about this, but its WarShips spent much less time—much, much less time—shooting other spaceships than delivering supplies to mammoth occupation forces spread across thousands of Periphery star systems. Also, the Star League came

from an era where orbital bombardment techniques were much more sophisticated than they are now. This century's WarShip crewmen are out of practice and they can't depend on having a dozen other WarShips covering other regions of a hostile planet, so they have to put their ships into handy orbits, often polar orbits, which cover most of the planet but leave only brief windows for bombardment. The Star League, though, was known to have a WarShip brake to a halt in space over a target and hover for hours on end, and it could use other ships in the fleet to cover the rest of the planet in case of simultaneous conflicts elsewhere on the planets. Bombardments from one of those hovering monsters wouldn't just level cities and armies, they could also remodel the landscape. The Terran Alliance's Admiral James McKenna famously demonstrated this by obliterating an island to launch his very successful military coup.

Of course, doing this sort of thing takes lots of ammunition. And spare parts, I'm told. Capital weapons are very abusive of their own mechanisms. A spare thousand-ton barrel of a class-40 naval autocannon takes up some elbow room in a ship, as I'm sure you can imagine, and the laser-triggered fusion blasts that fling naval autocannon shells eat barrels like candy.



WarShip Origins

The first armed spacecraft…well, I'm going to discuss this later, but guns were going onto spacecraft for at least experimental purposes at the beginning of the Space Age, just about as soon as the first satellites were launched. There's evidence that both major powers, the USA and USSR, experimented with primitive guns on their manned craft almost immediately. By the end of the century, and the Second Millennium, the US was aggressively pursuing space-based weaponry that would serve to protect humanity during the Second Soviet Civil War in the 2010s. However, it's hard to call armed satellites and space stations "WarShips."

Later in the 21st century, it turned out that the fusion revolution that made spaceflight so simple also allowed spacecraft to be used in criminal acts. For example, remote facilities abandoned by their owners, sometimes with workers still in them, sought to survive when isolated. Lacking money to buy the supplies and parts they needed, they turned on their neighbors. Thus space piracy was born—and you thought pirates needed JumpShips. The Terran Alliance responded with armed spacecraft that were somewhere between a small craft and small DropShip, by modern standards, and could probably be shot apart by the guns of a merchant cargo DropShip today.

BATTLESHIPS, HEAVY CRUISERS AND CORVETTES, OH MY

Speaking of WarShip roles, some people might talk about different WarShip "classifications." What are these classifications? Terms like, "cruiser," "corvette," "frigate," "battleship" and many others that armchair admirals like to hang on WarShips, hinting that these WarShips play some special role. But all the volumes of pontificating on WarShip classifications bear little resemblance to reality in the 31st century. The actual applications of WarShips in the past two decades have often varied substantially from their grandiose planned roles. Escorts, multi-role cruisers, carrier-killers…all nice and well, but most WarShips have been used in the same fashion: as capital weapon platforms for aerospace superiority, as bombardment units and sometimes as troop transports. They're apparently supposed to show up, kill everything in sight and maybe blow something up on the ground.

Modern usage of WarShips is kind of like a lance of light pirate 'Mechs dropping on a very backward Periphery planet with only primitive tanks and infantry for defense: the 'Mechs are used arrogantly, as if they are the kings of the battlefield, and pressed into the "kill 'em all" role without consideration for their design specs.

Now, if the ship has been called a "battleship" or some kind of cruiser, then "kill 'em all" is not far off from its intended role. But when corvettes and destroyers are being forced into that sort of duty, then you know no one's really paying attention to the owner's manual. And all the folks who are using WarShips with minimal fighter and DropShip support are ignoring their tactical manuals. You don't use WarShips alone anymore than you use tanks without infantry in an urban environment.

I won't name names, but any nation using *Fox*-class corvettes as the primary aerospace defenders of key planets is a great example of modern WarShip usage. Or mis-usage, maybe. You can't really fault those nations, though. It's not like they have a lot of other WarShips they could use.

For better or worse, the only folks who have enough WarShips to use them in proper fleet actions with the ships sticking to their designed roles either aren't doing so (Ravens and WoBblies, I'm looking at you) or have had their fleet come apart at the seams along with their nation.

A few decades later, humankind was beginning to settle the stars and the Alliance's leadership began worrying about how it would control all those future colonies. The solution was simple: a Navy. In 2120, the Navy received funding for six military JumpShips over ten years. The first, the TAS *Charger*, was completed in 2122. The *Charger* could probably be called "an armed JumpShip," since it lacked the modern features that define a WarShip, primarily a true compact core. Like many early JumpShips, the *Charger*'s core was smaller than those of modern standard JumpShips, but it was also a less capable drive.

The heady days of freedom from Terra lasted until April of 2128, when the colony ship *Liberator* jumped from Terra and was never heard-…oh, wait, the *Liberator* was just found a few years ago, wasn't it? But at the time, the loss of hundreds of colonists and the JumpShip was a disaster that prompted the Alliance to crack down on wild colonization efforts. All colony ships would be escorted by the new Terran Space Navy, and all colonies would receive Alliance governors. Still, this Navy was not equipped with true WarShips—yet.

That revolution came with the development of the compact K-F core around 2300 C.E., which reached a new height in K-F drive weight efficiency, if not cost efficiency. The Terran Alliance wasted no time but a lot of money combining this new technology with existing capital weaponry, the naval autocannons, and breakthroughs in weaponry like naval lasers. The first true WarShips were thus introduced in 2300 C.E. with the TAS *Dreadnought*. For those of you who don't have your noses buried in military history books, a namesake of the TAS *Dreadnought* revolutionized oceanic battleship design almost exactly 400 years before the Alliance's WarShip was launched, and the naming of the Alliance's new toy was not coincidental. The first significant combat action by WarShips would be to launch McKenna's coup and topple the Alliance government, to be replaced with McKenna's Hegemony.

After that point, changes were a matter of evolution and technology refinement. Some of the oldest WarShips, like the *Aegis*, remained in effective service until the present day.

Why Build WarShips?

On the face of it, this is almost a silly question. WarShips are big. WarShips are awesome. WarShips have huge guns and thick armor. WarShips, dare I say, are sexy. Why wouldn't *everybody* build WarShips if they could?

In fact, if you notice how rapidly WarShips are being destroyed, you might start to wonder about their utility. They *can* be replaced by other units, like fighters and assault DropShips, in most applications, though sometimes WarShips' replacements have to struggle. The largest problem, in the opinion of this armchair admiral, is that WarShips are rarely utilized properly. Indeed, the reason behind most WarShip programs of the Inner Sphere boils down to "national pride" and (especially) "because the other guys are doing it." For example, does everyone remember Tharkad's rhetoric about "a cruiser gap" after the Alliance seceded from the Federated Commonwealth? While the resulting battle cruisers are impressive ships by many standards, our government took a very sensible light cruiser design—sensible for reasons I'll discuss below—and turned it into the *Atlas* of cruisers, just so there'd be no doubt who had the best cruiser. There are endless performance-based justifications for the final form of the *Mjolnir*s, but if you look at the contemporary ranting coming off of Tharkad, you'll see that the reasons were political. The hasty upsizing of the *Mjolnir* caused some problems, too, like the goofy mix of three different autocannon calibers and unnecessary "mine's bigger than yours" naval Gauss rifles.

Another crass offender in "national pride" and "because the other guys are doing it" is the Capellan Confederation. The Confederation threw away any coherent naval build plan just to get out some WarShips, any WarShips, and if you look at the design of the *Feng Huang*...well, look at the Capellan propaganda that calls it a "*Thera* killer." It's nothing of the sort. Oh, the basic engines and armor have potential, but it can't fight its way out of a wet paper bag. It would make a decent light task force transport with the collars, sort of like a plus-sized *Fox*, but no Capellan admiral is going to admit that their *Thera*-killer is better utilized as a tougher *Star Lord*.

Now, the Federated Commonwealth, Free Worlds League and Draconis Combine all jumped into the WarShip program because "all the Clans were doing it," and they actually had good justifications behind that excuse. They were so inexperienced with WarShips that they overlooked a premier defensive WarShip killer—aerospace fighters—and sought to build WarShips of their own. And given the fighter-deficient designs that the Clans were using, building WarShips to kill WarShips was reasonable, and opened up all the potential side applications for WarShips. The first four invading Clans had about three score WarShips between them, and it seemed almost feasible to build enough WarShips to match that threat, though that never quite happened. Certainly not as planned.

With that said, those nations give some good examples of why WarShips are built, and how grandiose plans for an epic fleet can go awry. The Federated Commonwealth's production of...how many? almost two dozen?... *Fox*-class corvettes is a good start. The Federated Commonwealth and its successors built more than twenty of the ships. Anyway, while the Houses had been poking at the compact K-F drive data from the Helm memory core for a couple of decades, the Clans scared the Federated Commonwealth into moving on WarShips quickly. Despite the time pressure, Hanse Davion respected his engineers when they said, "You're asking a lot, and we don't know squat. We need a starter design," so he let them build the *Fox*. Or the RX-78, as it was known at the time, with "X" for "experimental."

The *Fox* was really an intelligent design from an industrial and engineering standpoint: it was small, had a small crew, a small array of light capital weapons, small engines, a spheroid-like hull and a small compact core, all of which made it easy to design and mostly within the limits of FedCom industry to produce. The RX-78's blueprints were done in under eighteen months, which is pretty damned impressive when you consider how inexperienced the architects were, and how well the *Fox* functioned compared to its often-flawed contemporaries. Construction of the first ship was understandably slow due to shipyard inexperience, but the real delays were caused by terrorist attacks and ComStar's little snit that held up key engine components. Subsequent ships in the class would be built quite quickly. Individually, they took about eighteen months, like civilian JumpShips of similar size, and parallel production in multiple shipyards meant better than two per year were launched in the 3060s.

Within the dates lies the catch, though: the world outside the AFFC Navy didn't stand still. The "*Fox* as a starter ship" plan didn't last. The anticipated *Avalon* cruisers, which would be the first "real" WarShips of the AFFC, were delayed, and delayed, and delayed some more thanks to AFFC reconstruction expenses. The *Avalons*' escorting assault DropShip squadrons certainly never got built. The *Mjolnir* light cruisers, the intended sidekick for the *Avalons*, were hijacked for another role and lost to the other side in the civil war. (By the way, that example should make clear that the Federated Commonwealth had a good *theoretical* understanding of how to build a fleet—it's not all about big WarShips, but their supporting elements, too.)

While the *Avalon* was floundering, the *Fox* was almost bug-free and most of its epic start-up costs were paid off. It didn't cost much more to keep the *Fox* in production than it did to keep all the specialized, *Fox*-related shipyards and factories idle but operational. People wonder why three militaries—the AFFC and its estranged children—built so many "pop-gun corvettes that cost more than a *Mjolnir*," but that's only the flyaway cost, the cost of the labor and materials that went into one ship. That amount is the tip of the iceberg in WarShip production costs. Getting started, building and sustaining all those specialized factories that have no other customers, designing the WarShip and researching new technologies for each new class, building the supporting fighters and DropShips...that's where the money goes for each new design. Very few new Inner Sphere WarShip designs reached that level of mass production. Two *Mjolnir*s certainly didn't, and the *Avalons* were only just getting there when they were largely exterminated.

That all might make sense for bean counters and industrialists, but any admiral is going to wince when he's stuck with so many undergunned "WarShips." And *that's* how a decent WarShip fleet plan can go awry.

If any House got it right, it was the Mariks. Despite all the upheavals of the past two decades, they stuck to the plan to defend against a Clan invasion and built the foundation of a real fleet, one that could challenge any single Clan's fleet. Or a couple, honestly. They built in quantity, they established shipyards for all necessary supporting ships, they set up the academies, and held the line through every parliamentary budget review. It was a fantastically expensive undertaking. Their core ships, the *Thera*s, were even a quite reasonable design for fighting other WarShips. The *Impavido*, *Agamemnon* and *Eagle*...well, their hearts were in the right place as *Thera* support units, even if they could've taken lessons from the *Feng Huang*. If the League had gotten to 3080 uninterrupted, its Navy would've been scary.

Especially if it upgraded the *Thera*'s sidekicks. My pet upgrade recommendation: a coat of paint would double the armor thickness on the *Aggie*s and *Eagle*s, and it's a cheap upgrade.

As an aside, it's kind of a shame that the *Mjolnir*s never got anywhere. Even as Freudian pacifiers for politicians' inadequacies, they had real potential. They were cheap per unit for a ship their size, and they had almost all the right features to make a serious pocket battleship. Given some *Vengeance* escorts and another ten years of production and they would've been the start of a good foil for the Free Worlds' Navy, and would almost certainly overmatch the Falcons' fleet. I think we would've gotten there, too, since whatever competency problems we Lyrans have with our military leadership doesn't carry over to our industrial know-how. "Mass production" is as natural to Lyrans as breathing.

To answer my second question, some people shouldn't bother with WarShips. The Taurians would be better off buying up fighter-carrier DropShips and expanding their fighter production than wasting fortunes on that ancient WarShip they're trying to resurrect. The Capellans and the Combine should take a step back and consider useful applications for WarShips, rather than building ships without real tactical roles, or changing the roles after their WarShips turn out to be riddled with technical flaws. Even

the WarShip-intensive Word of Blake kind of missed the boat on the potential of WarShips by pissing them away in dribs and drabs.

HYPERSPACE

Here's some background on something shared between JumpShips and WarShips: hyperspace.

We wouldn't be here today if Kearny and Fuchida hadn't figured out the basic idea of moving matter into, and then back out of, hyperspace. Jump travel does not involve wormholes, or somehow ripping holes between two points of the universe and stepping through, or travel through some alternate "dimension"—to use the science fiction term for another plane of existence—at faster than light speeds. Jump travel entails a transformation of the ship through hyperspace, and I mean hyperspace in the classic mathematical-topographical sense.

To borrow the classic "flatland" example: imagine that a 2-dimensional creature skittering around its flat world bumps into a wall. The only way the flat creature can conceive of passing this wall is to break through or go around it. But then Flat-Kearny and Flat-Fuchida come along and say, "We've got a better idea: stand up, into an extra dimension, this hyperspace we call 'the third dimension.' Then you can go *over* the wall much faster than going around it or through it. When you're on the other side, you can lay back down into your normal two-dimensional world." Then the Flat-Kearny and Flat-Fuchida get laughed out of their flat research jobs and are forgotten until 80 years later when other flat scientists realize they were right all along, and finally make a flying machine that can move vertically, utilizing this "hyperspace" that is the third dimension, and bypass that wall.

That's what the Kearny-Fuchida drive does for us. A JumpShip rotates into a hyperspace configuration and can then pick a new place to "rotate" back into our normal three spatial and one time-like dimensions. It generates a "hyperspace field" that encompasses a volume of space and mass, as shaped by the drive core and K-F booms reaching to any attached DropShips, and transforms this to a new location almost instantaneously.

Of course, it's much easier to call this a "jump" or imagine you're somehow making a "tunnel" through space than to deal with hypersurfaces and hypervolumes and all the other fun of hyperspatial mathematics.

The first JumpShips were limited to "jumps" of eighteen to twenty light-years, though this rapidly reached the modern thirty light-year limit imposed by exponentially increasing energy demands. During a jump, a ship accomplishes a number of feats beyond "mere" travel between points that could be kilometers or light-years apart.

K-F Drive Damage to Nearby Objects

The first feat is that the hyperspace field forms at the destination and performs an incomplete "transformation" on any matter within the destination field—it converts this matter to energy in a process that is drawn out and red-shifted into the distinct infrared glow of an arriving JumpShip. This is done because space is pretty empty, but not completely empty. Without this annihilation, ships and crews would be riddled with space dust. No, this would not produce an enormous explosion—matter is mostly empty space, so there's plenty of room to briefly overlap two objects. Electrostatic repulsion forces will shove "interpenetrated" atoms back to appropriate spacings immediately, but this effect by itself is not a serious problem. The problem is that human cells, K-F drive cores and computers can be wrecked by suddenly being laced with space dust and solar wind particles. Any explosions resulting from a JumpShip landing on top of other mass is strictly a result of the hyperspace field's annihilation process.

There is a "choke limit" to this annihilation process, since the K-F drive doesn't have infinite power to convert matter to energy. It's actually in terms of kilograms, which is far more than enough to clean out the stray atoms at even a dusty jump point, and the destruction takes place over many seconds so there isn't an enormous explosion. You likely all know the famous example of the *Mississippi Queen*, an SLDF corvette, arriving atop the *Richardson*, a transport, during the Liberation of Terra that involves a dramatic

REPAIRING STRANDED JUMPSHIPS

Bringing replacement drive parts to a crippled JumpShip is problematic. Many components of a K-F drive are easy to deliver, like the helium tankage, K-F controllers and K-F initiators, but the problem child is the big one: the core. This behemoth component is cast at the shipyard as a single, woven, giant element. Because it will interfere with a hyperspace field whether it is powered or not—like a bar of iron in a magnetic field—the only way the core can travel between stars is under its own power. The only other way to transport a K-F core is to fragment it down to gravel and, preferably, chemically process the titanium-germanium material into something less likely to interfere with a hyperspace field. Then you need the full facilities of a shipyard, or a yardship (which are incredibly rare), to recast the core, which can require many months. Most of that's spent cooling the core without fracturing it.

Is it worth it? It's not a technologically futile exercise to transport new cores to a stranded JumpShip, not always—if you have a spare core. But it's often less expensive to buy a new JumpShip than to pay for the salvage operation. Unless, as in the Succession Wars, any JumpShip is precious. And JumpShips are designed to replace their cores if need be, though that entails ripping open one end of the ship or the other and pulling out the core. Ships are sometimes designed to remove surprisingly large sections to get at cores. For example, much of the bow section might be mounted in an easily removed module, kind of like the "tilting cabs" on large trucks. The usual means of transporting a core is to build it up to a complete drive—controller, initiator, tankage and all—and put a very lightweight transport shell around it, a sort of shipping container for K-F cores. I mean, you don't *need* the shell, but K-F drives don't like micrometeorites and the temperature extremes of space. Then the drive is delivered by a tender ship, another JumpShip that recharges this "naked" K-F drive and programs it for jumps to the destination. Obviously, the tender has to move out of the way for the replacement drive to jump, and then it follows. Finally, this new core has to be installed in the stranded ship. It's a lot of work and, prior to the Succession Wars, was primarily performed for WarShips.

JumpShip salvage tends to work the same way. You bring just enough parts to get the JumpShip hyperspace-mobile again and send it to a shipyard for repairs. Otherwise, about all you can do is shred the core for raw materials and salvage what other parts will fit in your holds.

explosion, but this illustrates the choke limits. The *Mississippi Queen* arrived with her nose inside the tail of the *Richardson*. Were matter annihilation unlimited, the entire SLDF fleet would've been wiped out by thousands of tons of matter converting to energy. The explosion actually resulted because the machinery in the stern of the *Richardson*—including an autocannon magazine and the ship's fusion reactor—did not take kindly to sharing their space with the structure of a corvette. The *Mississippi Queen* survived the explosion and was able to clear the jump point under its own power.

The real damage done by an arriving or departing JumpShip is to objects caught by the "space warping" effects of the hyperspace field. The ship is trying to "rotate" a volume of space through hyperspace, but can only do that accurately for mass that it is aware of. This is accomplished with the K-F core, which has branches that "map" the mass in the ship, and extensions through docking collars and into DropShips. Mass that the K-F drive is unaware of—such as a nearby fighter—generally gets treated as empty space, not as a complicated aerospace frame and human pilot. Sometimes nearby masses get carried with the jump, sometimes they don't, and often they are only partially carried through the jump, inflicting immense—but sometimes survivable—damage.

While a DropShip, fighter or free-floating spacer in a suit might survive a nearby jump, other K-F drive vessels are in for a very bad experience. As I said, hyperspace fields are formed in anticipation of mass that they're aware of. Also, the K-F core of a drive is meant to form, shape and manipulate hyperspace fields. So when a hyperspace field forms and a "foreign" K-F core is in it, you get a mess for both ships. It's a miracle the *Mississippi Queen* was able to maneuver at all, since its core would've been ruptured by drive interaction with the *Richardson's* core. The *Queen* certainly never jumped again.

This leads me to the story of the Ryan Ice Cartel "iceships." These were fleets of sixteen JumpShips that arranged themselves around several cubic kilometers of ice, over 5 billion tons, and jumped together. The key to the success of this operation was that the K-F drives of these ships "talked" to each other (via laser links, typically), so they knew to adjust their fields in anticipation of nearby hyperspace fields and K-F cores. Though they did not have a perfect "map" of the iceberg they were carrying, the frozen water was quite homogenous, so it was safe to use an approximation of its structure when the fields formed. The iceberg was still wrapped in netting and a sunshield because, more often than not, it was shattered by the jump, but almost all the water would make the trip in a manageably semi-intact mass. The iceships understandably used modified K-F drive controllers and unique, very complex navigation calculations, so this is not a stunt that just any JumpShip can accomplish.

Because of the risk of drive interactions, even in the vastness of standard jump points, most civilian JumpShips will maneuver slightly inside the proximity limit of a star before they begin charging. This is where jump point stations usually keep station, too.

Similarly, drive interactions mean that crippled K-F drive vehicles have to be repaired on site. There is no way to "jump" a disabled JumpShip with another K-F drive vessel—the process will destroy both. Ships that cannot be repaired in the field are generally abandoned or even dropped into the nearest star.

JumpShip Gymnastics

A jump alters more than position, it alters velocity. A JumpShip arrives stationary with respect to its destination jump point. This entails substantial changes in velocity, since stars may be moving at tens of kilometers a second with respect to each other. A JumpShip using a non-standard jump point may be circling a moon, star and planet for additional complications in velocity relative to the destination. These complications are part of the reason that it's easiest to calculate jumps to and from the "standard" jump points over a star's north and south poles—you only have to worry about the motion of the star with respect to the destination star. Excess velocity is dumped by the drive in the form of infrared radiation, which contributes to the IR signature of an arriving JumpShip.

On the other hand, you do not have to be stationary with respect to the jump point when you make the jump. WarShips can and have jumped after burning non-stop to jump points. This is possible because the ship has a good idea of its own movement and the upcoming gravitational fields where it will jump, so it can plan the moving jump accordingly.

Now, about facing…yes, question? What? No, they can't do that. All right, for those of you who didn't hear, the question was, "Since JumpShips can adjust their velocity during a jump, can they pop out of a jump point with some extra velocity?" That's a good question, but the answer is no. A forming hyperspace field is very sensitive to gravitational gradients and there's a deliberate feedback process to help the drive's controller know if the hyperspace field forming at the destination is matching the velocity of the destination jump point. If it's not, the hyperspace field will be moving through a changing gravity field, which makes it nearly impossible to form the hyperspace field correctly. And, no, contrary to what I said earlier, jumps aren't actually instantaneous; they just seem that way. There's a brief period for the drive controller to accept certain feedback, like recognizing a gravity-distorted field or damage in the core from quick-charging.

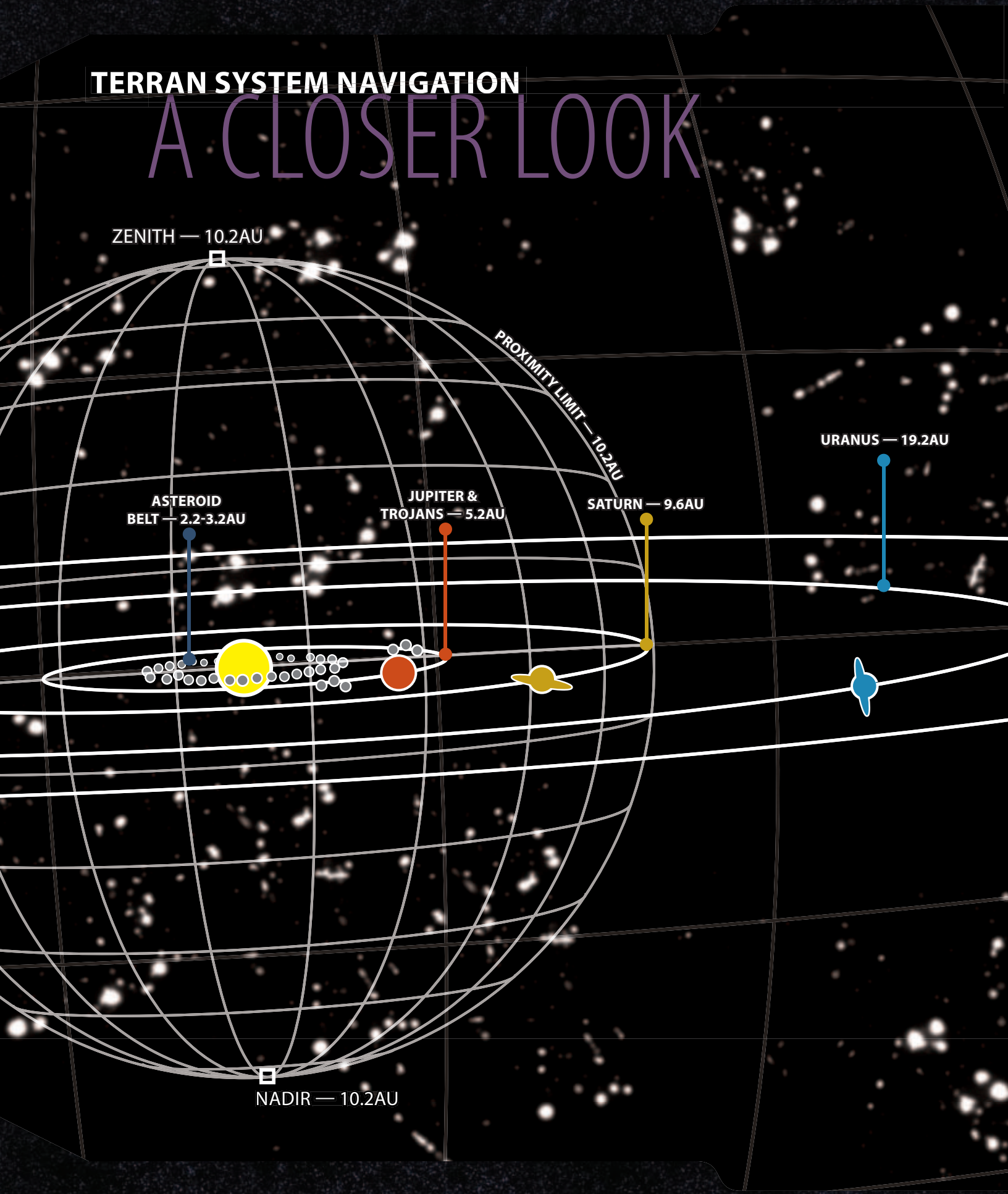
The process of translating a ship from one position to another does open one interesting option: you can re-orient the ship during the jump so that it is facing in a new direction at the destination. A JumpShip will normally retain its original orientation. If the JumpShip's nose was pointed coreward at the origin jump point, it will be pointing coreward—allowing for the trivial lateral displacement of the jump—at the destination. That's the default—if a captain wants the ship to flip around to be ready to burn clear of a jump point immediately upon arrival, then that can be worked into the calculations.

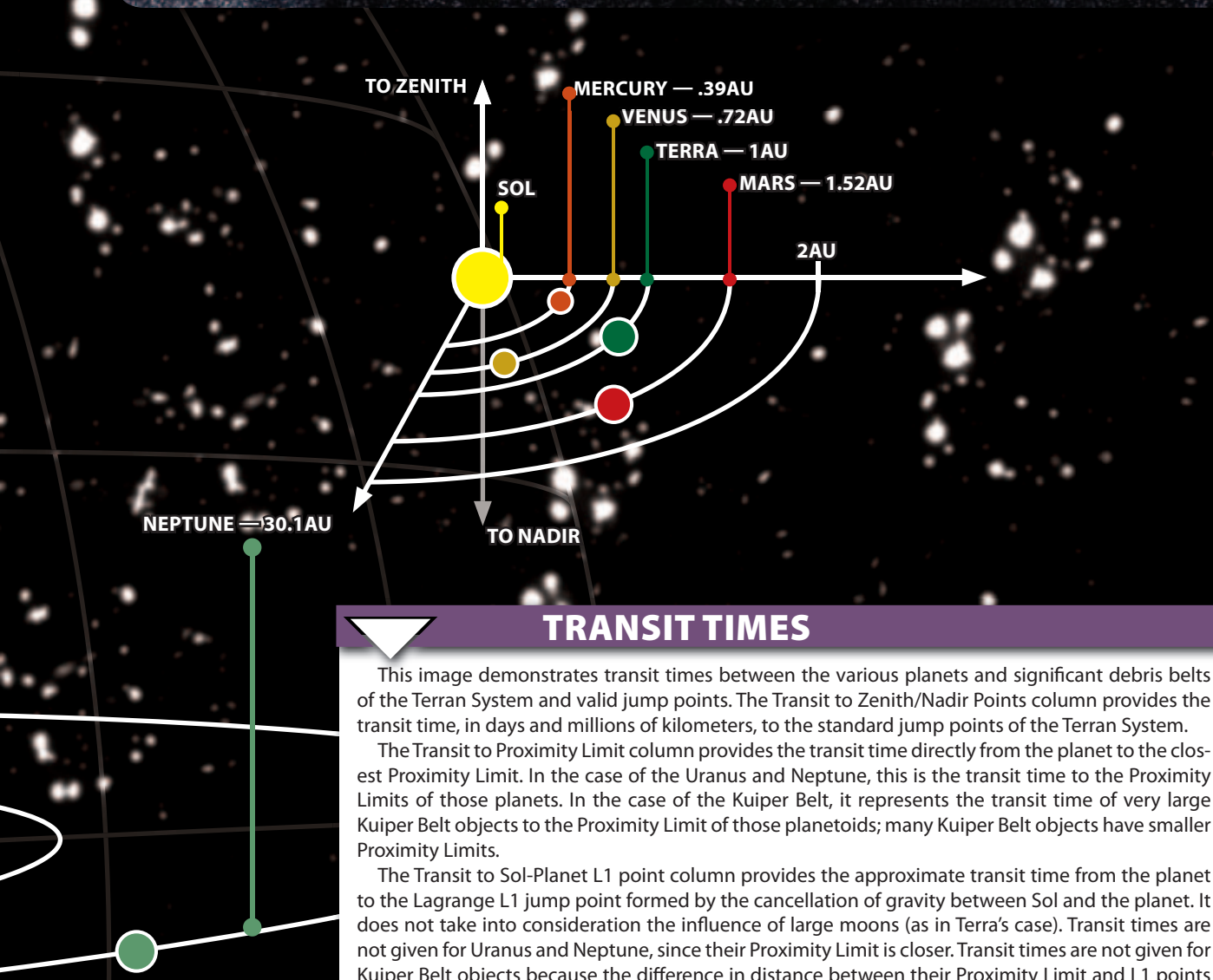
Jumps are a surprisingly accurate and precise means of traveling. Civilian ships with lazy navigators average a 5,000-meter spherical error of probability, while military ships usually manage 500 meters with their fancier navigation systems. Of course, as they say, "Garbage in, garbage out." A navigator that feeds in the destination incorrectly can cause a bad misjump by many AU—and human error is most responsible for misjumps. Misjumps of light-years have been reported, usually accompanied by notices that a ship is taking applications for a new navigator.

What other tricks are notable about jumps…ah, range. While thirty light-years seems to be a fairly hard limit, it is possible to jump much shorter ranges. The first jump with a ship—that is, something larger than atomic particles in a

TERRAN SYSTEM NAVIGATION

A CLOSER LOOK





TRANSIT TIMES

This image demonstrates transit times between the various planets and significant debris belts of the Terran System and valid jump points. The Transit to Zenith/Nadir Points column provides the transit time, in days and millions of kilometers, to the standard jump points of the Terran System.

The Transit to Proximity Limit column provides the transit time directly from the planet to the closest Proximity Limit. In the case of the Uranus and Neptune, this is the transit time to the Proximity Limits of those planets. In the case of the Kuiper Belt, it represents the transit time of very large Kuiper Belt objects to the Proximity Limit of those planetoids; many Kuiper Belt objects have smaller Proximity Limits.

The Transit to Sol-Planet L1 point column provides the approximate transit time from the planet to the Lagrange L1 jump point formed by the cancellation of gravity between Sol and the planet. It does not take into consideration the influence of large moons (as in Terra's case). Transit times are not given for Uranus and Neptune, since their Proximity Limit is closer. Transit times are not given for Kuiper Belt objects because the difference in distance between their Proximity Limit and L1 points is negligible.

PLANET	MEAN ORBITAL RADIUS	TRANSIT TO ZENITH/ NADIR POINT^	TRANSIT TO PROXIMITY LIMIT^	TRANSIT TO SOL-PLANET L1 POINT^
Zenith/Nadir	1513.9Mkm/10.2AU*	N/A	N/A	N/A
Mercury	57.9Mkm/0.39AU	1,515Mkm/9.10 days	9.8AU/8.92 days	0.024Mkm/0.04 days
Venus	108.2Mkm/.72AU	1,518Mkm/9.11 days	9.5AU/8.78 days	0.169Mkm/0.01 days
Terra	149.6Mkm/1AU	1,521Mkm/9.12 days	9.2AU/8.64 days	0.260Mkm/0.12 days
Mars	227.9Mkm/1.52AU	1,531Mkm/9.15 days	8.7AU/8.40 days	0.129Mkm/0.09 days
Asteroid Belt	~2.2-3.2AU	1,558Mkm/9.23 days	7.7AU/7.91 days	0.009Mkm>/0.02days>
Jupiter	778.5Mkm/5.2AU	1,699Mkm/9.64 days	5.0AU/6.37 days	24.0Mkm/1.15 days
Saturn	1,433Mkm/9.6AU	2,079Mkm/10.66 days	0.6AU/2.21 days	24.3Mkm/1.15 days
Uranus	2,877Mkm/19.2AU	3,228Mkm/13.29 days	1.42Mkm**/6.69 hours	N/A
Neptune	4,503Mkm/30.1AU	4,718Mkm/16.06 days	1.54Mkm**/6.96 hours	N/A
Kuiper Belt	~39.5-48AU	6,850Mkm/19.35 days	0.01Mkm (avg)**/0.56 hours	N/A

AU = 1 Astronomical Unit
Mkm = Million Kilometers
^ These transit times assume constant 1G acceleration half-way, then constant 1G braking to the listed distance
** This is the distance from Sol to the jump points; the points are not actually in orbit*
*** This is the proximity limit of the planet or typical small body, which is beyond Sol's proximity limit*

physics lab—was by a drone ship between Sol's standard points, a distance of about 20AU. The minimum range is actually about thirty kilometers. And it's only thirty kilometers because the oddities of K-F drives allow a JumpShip to be its own interfering drive. I mean, a JumpShip that tries to jump "in place" or within a few kilometers of its current location will get to play the *Richardson* to its *Mississippi Queen*. Twenty-five kilometers just about clears this effect, but when you factor in the usual jump error radius, you might want to think about thirty or more kilometers.

Time. I just saw a fascinating load of tripe a week ago on Channel 98 from that conspiracy nut, Starling, something about JumpShips as time machines because of a misunderstanding about the "time-independence" of hyperspace equations. The equations' "independence" from time is a mathematical note meaning that time in "real space" is not a factor in the jump field equations. The jump will happen at its own pace generally determined by constants that are factored out of the equations. The independence does not mean you can relocate the ship wherever—whenever—you want in real space-time. Time only goes forward from any perspective.

Now, there is some disconnect between hyperspace and real space when it comes to time. The shipboard perception of time spent "jumping" is actually mostly in real space as the drive's field is forming, which can really distort human perceptions. The actual shipboard time spent in hyperspace is too short for shipboard humans to notice, though minutes may pass for external, real space observers. This does lead to the experimentally confirmed possibility that a flawed jump may seem to leave a ship "stuck" in hyperspace. It's an elaborate form of suspended animation, not time travel in the usual sense. And I don't know if it's actually possible with a full K-F drive, it's just something that's been done in labs with subatomic particles and HPG transmissions.

JUMP POINTS

Where can you actually use a jump drive? Everyone's heard that JumpShips have to jump from and to "jump points," but what are jump points and where are they?

Let's start with the K-F drive. As I mentioned earlier, K-F drives generate hyperspace fields that dislike shifting or very curved space—in other words, the hyperspace fields don't like gravity. They have a certain maximum tolerance, after which the drive can no longer compensate for the distortion imposed by gravity. So, where do you find places with minimal gravity?

Naturally, quite far away from objects with lots of mass like stars and planets.

Since stars generally represent 99.9 percent or more of the mass in a system, stars all but singlehandedly establish the boundaries around a star system where a JumpShip can safely arrive. The minimum distance that a ship can approach a star is called the proximity limit, which forms a sphere around the star. You can jump anywhere on or outside the proximity limit of a star. Since proximity limits are in terms of astronomical units—AU—not light-years, and often do not encompass all the planets of a star system, this should lead you to understand that all of deep space, interstellar space, is one giant, valid jump point. Any jump point right on the proximity limit sphere is called a proximity point.

If you're curious about what jump point motion a JumpShip matches in deep space, it is generally the motion of the closest star, or the average motion of several closest stars. In other words, average galactic rotation is the default for deep space jumps.

Planets have much smaller proximity limits than stars, rarely exceeding a few million kilometers for the largest gas giants. This means planets do not significantly block off outer solar systems, and you're pretty much safe to jump where you want out there unless you manage the abysmal luck of landing right atop an uncharted deep space comet or something. Planets cannot be entirely ignored, though, and throw enough problems into calculations that navigators seek a location where planetary influences largely cancel each other out: the points on the system's proximity limit intersected by the poles of the plane of the ecliptic, which is the plane most of the planets are on. Generally, these least-troubled jump points are "over the poles of the star," since stars tend to have an equator close to the plane of the ecliptic as a result of early movement in the proto-stellar cloud that produced the system.

Even the Deimos Project scientists identified these "standard jump points" as significantly easing jump calculations and made their first test jumps from those locations. Today, we call these the zenith and nadir points. Jump calculations made at these points are generally good for months until planetary movement calls for recalculation. In fact, the zenith and nadir jump points are so preferred that all other points are called "non-standard jump points," even their fellow proximity points.

In addition to deep space jumps and proximity points, there are a couple of other sorts of valid jump points. These two types of jump points fall under the heading "pirate points" because they are rarely used by anyone but pirates or other invaders looking to be sneaky. This is because it's very hard to navigate to these points—you need a top-notch map of the system with precise timing, or you'll miss the moving jump points.

The two types of pirate points are transient points and LaGrange points, and they occur inside the proximity limit of systems. LaGrange points—not LaGrange *jump* points—are regions of space where the gravity of two bodies and centripetal force end up canceling. You can look up LaGrange points on your own; this isn't an orbital mechanics class. One of those LaGrange points, the so-called "L1 point," is a place formed by the effective cancellation of gravity between the two bodies. Relatively near that place is often an area where gravity for most influential bodies is cancelled to a level safe enough to use a K-F drive. When you subtract the influence of centripetal force, you find the point of stability is closer to the larger of the two bodies by a distance that depends on…well, the relative size of the two bodies and influence of any other substantial bodies in the system. A planet-moon L1 point often wiggles around a lot based on the input of the local star. However, if you can imagine how a planet and moon forming an L1 point are whirling around a star together, and you imagine how small a valid jump area is formed in this fashion, you can imagine how much more complicated it is to arrive at such a LaGrange point than at a standard jump point.

I mean, standard jump points can be *seen* from another star. Modern shipboard astronomical instruments usually can roughly judge the mass of a star and look for the Doppler shift in its light that indicates its rotation, allowing a navigator to get a general idea of the proximity limit and probably the standard jump point location. If the navigator's uncertain, he can always aim further away from the star. You cannot do the same for a LaGrange jump point.

Anyway…the other type of pirate point is the transient point. Transient points are often at or near LaGrange points, but they are not continuously valid jump points because the gravity of some other body, usually a moon, periodically raises gravity levels beyond that acceptable for jumps. Planets with several moons often have transient points, as do planets with large, neighboring planets.

Last item regarding these pirate points…There was a huge debate in the media recently about the need to watch all the hundreds of LaGrange points around Kaumberg's system. Just to be clear, LaGrange points are places where gravity from two bodies, typically a planet and its moon or a planet and the local star, *kind of* nullify each other and create a stable point where a spacecraft can more or less hover. The easiest point to explain is the L1 point, which is between the two bodies. Let's say those two bodies are a planet and a moon, to keep this easy to imagine. The planet's gravity pulls one way, while the moon's gravity pulls the other way. At the L1 point, the gravities roughly cancel. The actual L1 point is a bit closer to the planet than just where the gravities cancel because you need a bit more gravity from the planet to cancel the outward slinging effect of centripetal force.

The role of centripetal force is even more apparent for the L2 point, which is on the far side of the smaller body, the moon in our example. At L2, you've got two gravity fields—the planet's and the moon's—pulling in one direction. The moon and planet are both on one side of the L2 point, so why would something find stability there rather than plummeting toward the moon? Because centripetal force is high enough to match gravity.

No, I'm probably not using the terms "centripetal" and "centrifugal" correctly, but you should get the idea. Take a physics or orbital mechanics course if you want more details.

Anyway, the short of it is this: in any set of LaGrange points, only the L1 point—well, a place near it—is a valid jump point. The actual jump point will wiggle around the real L1 point due to the influence of the local star and planets. This is why the need for all those monitoring satellites is silly—you only need to watch L1 points. And in the outer system…well, the whole outer Kaumberg system is one big jump point, so there's no need to watch even L1 points there—you have to watch the whole outer system, all the way to the nearest stars, to be really thorough. And that's not practical with today's sensors.

Double Jumping

K-F drive vessels equipped with lithium-fusion batteries can "rapidly" jump again, but it's not an instant process. A multitude of issues delay "instant" jumps. The primary issue is getting the ship's navigational sensors back up, which takes a hard minimum of thirty seconds. Without those, the ship doesn't know where it is, even if the second jump is already pre-plotted. That's the next delay: plotting the second jump. If you got things straight and know exactly where you are and where you're going, then you can have a pre-planned jump waiting in the navigational system. If your jump didn't put you in the right place, or if you change your mind about the destination, then you need to recalculate the next jump from scratch. That can take minutes for a jump between standard jump points or hours if you're moving to or from non-standard jump points.

Another physical delay is the hyperspace field retraction process. Sure, your trip through hyperspace was only an instant for you, but it might take minutes for the field to form and contract. You cannot jump until the field has fully collapsed.

Some secondary issues also sneak up on quick double jumpers. Jumping tends to produce static electricity in a ship that can take a while to bleed off—JumpShips often seek degaussing at recharge stations to really put this problem to rest. But double jumping can increase static build-up to levels that shielding can't handle and warp sensor input and computer operation, and interfere with electrical systems. In addition, all the energy pumped through a jump core invariably entails some heating that the brittle core dislikes—micro-fractures are possible, and will eventually interfere with core functions as an electrical capacitor, affecting its ability to properly form a hyperspace field. The most dramatic heating effect may be helium evaporation and the associated rupture of core helium tankage seals, which will promptly cripple a drive.

For all those reasons, it is standard procedure to use lithium-fusion batteries at days-long intervals from the first jump. Near-instant jumps are reserved for rare transit into or out of critical military situations.

Command Circuits

We've established that double-jumping is rough on JumpShips, that it takes about 176 hours to safely charge a JumpShip, and you should know that it typically takes days to cross the distance between a standard jump point and a habitable planet. These facts have shaped human history since the first interstellar jump. They shape warfare, commerce and colonization.

Some people, though, would prefer to travel faster. Usually the response is, "Too bad." But for the wealthy who can afford the mammoth cost, diverting multiple JumpShips—sometimes dozens of JumpShips—and arranging them into a *circuit* makes transit much faster.

The classic "JumpShip command circuit" involves a series of JumpShips, normally placed at inhabited systems as far apart as one jump can manage. A particularly high priority DropShip catches a jump on one JumpShip, detaches and moves to the next JumpShip, which carries it through another jump, and so on. In this fashion, it is possible to cross the thousand-light year diameter of the Inner Sphere in about a day, allowing for about an hour between JumpShips.

For mere mortals, though, such a journey typically takes about 35 weeks in the best of times, and maybe several years depending on JumpShip schedules.

Hyperspace and Health

A jump rarely bothers a person with more than a bit of disorientation and physical and psychological discomfort, like the school's cafeteria before the health inspectors shut them down. Which is a shame, that greasy food all tasted so good, and I could eat as much as I wanted while the salmonella was helping me drop kilos like you wouldn't believe….

Anyway, some poor individuals experience those symptoms—I mean, from hyperspace travel, not salmonella poisoning—but to a much greater degree. It's the difference


PLOB 07'

between a passing tension headache and an incapacitating migraine. Medication, usually a sedative, helps if the problem is known from prior experience. Unfortunately, there's no handy predictive test for this sort of vulnerability. You find out if you're vulnerable to "transit disorientation syndrome" the hard way on your first jump.

Less often, hallucinations may result from hyperspace travel. I've heard travelers report seeing atomic structures swell to visible size or planetary systems shrink to atomic size…and that there's some correlation between this and watching a navigational display during a jump. Funny how a space-warping process can make an image of a solar system swell or shrink, yes? But less funny are those individuals driven to catatonia by hallucinations involving their "personal demons." This sort of hallucinatory effect is usually unrelated to normal transit disorientation syndrome and may strike at any time, even hitting veteran spacers. Again, this is entirely unpredictable.

Finally, in very rare cases, a jump may trigger physical shock that can prove fatal. JumpShip crews are trained to treat this reaction and will have first aid kits nearby. This reaction is somewhat more likely among personnel who are in poor health or who are making their first jump, but it is otherwise unpredictable.

SPACE STATIONS

Space stations rarely figure prominently in the public mind, probably because they are not BattleMechs or WarShips and they rarely get involved in anything exciting or newsworthy. This is not surprising because space stations rarely have frontline military utility and are usually stuck in unglamorous jobs like industrial operations, freight transshipment and JumpShip recharging.

Unglamorous though space stations may be, they are important, and I think the best example is one of the first space stations. Crippen Station, designed at the end of the Second Millennium and launched early in the last millennium, was perhaps the most important space station in history.

I say that without exaggeration. Crippen Station coordinated the network of defense satellites that intercepted nuclear missiles launched during the Second Soviet Civil War (2011-2014), which could have crippled humankind for centuries. (It probably would only have been centuries if you assume that successful nuclear strikes outside the Soviet Union did not prompt a genocidal global nuclear war, which would've been a *somewhat* larger setback for humanity.)

After this incident, Crippen Station played another critical role: supporting humankind's ascent to the stars. Its zero-G industrial facilities presaged modern industrial space stations by producing exotic (for the time) materials and medicines, testbed solar power satellites, and spacecraft that would explore the Terran system. In that last role, Crippen Station served as the assembly point for spacecraft that colonized Terra's moon, the chemically fueled manned spacecraft that first reached Mars (the fourth planet of the Terran system), the first fusion-powered spacecraft and the first starships (the slower-than-light Magellan probes). Indeed, of tasks commonly performed by space stations today, about the only thing Crippen Station did not do was serve as a recharge station for JumpShips. Crippen later served for centuries more as a famous aerospace museum. Crippen was destroyed by a debris cascade from Amaris's destruction of O'Neil Station, a cascade which wiped out many spacecraft, from factories to habitats to satellites, around Terra.

In the centuries since Crippen Station's very successful life, space stations have gone on to serve humankind across the Inner Sphere and beyond. They have generally been more specialized than their famous progenitor and fall into a handful of major classes, which I'll go over now.

FACTORY STATIONS

Factory stations were once found throughout human-inhabited space, but the ferocious economic warfare of the Succession Wars drove many factories to planetary surfaces—at least, those factories that produced goods tolerant of gravity. Others, like the special mills that produced endo-steel or the chemical facilities that produced exotic drugs, all but died out. The recovery of lostech has revived these space stations, and they are being built in greater numbers now than at any other time in the past quarter millennium as the demand for products created in freefall is soaring.

Factory stations generally mass between 2,000 and 200,000 tons, but larger and smaller facilities do exist. The largest factory station built so far is a germanium ore refinery in the Federated-Boeing Interstellar Galax Megaplex, which masses more than two megatons.

HABITAT STATIONS

Habitats are a rare role for space stations. Though the 21st century seemed to promise an endless need for habitat stations in the barren depths of the Terran system to handle humanity's swelling population, the Kearny-Fuchida drive and the discovery of countless habitable planets eliminated most need for habitat space stations. The majority of habitats built prior to the Succession Wars were exotic resorts or high-priced living space away from some detested planetary surface.

The massive, and destroyed, O'Neil Station near Terra filled both these roles—Terra's ultra-wealthy wanted a place to get away from the crowds of dirty commoners on Terra, either permanently or for vacations. O'Neil Station is noteworthy as about the largest station outside of asteroid bases, with a basic framework massing more than ten million tons and the soil, rock and water of the "park" interior adding tens of millions more tons. It was a unique structure that could only have been funded by Terra at the height of the Hegemony's glory.

Today, the Inner Sphere's largest known habitats hold anywhere from ten inhabitants to fifteen thousand, with the largest (population fifty thousand) being at Gulf Breeze in the Lyran Alliance. The Clans are thought to have some habitats with populations exceeding two hundred thousand, but information on these stations remains scarce.

The destruction of O'Neil Station—which was nuked by Rim Worlds troops too lazy to contend with a conventional battle for a space city seven kilometers long and one kilo-

meter in diameter—presaged the destruction of many other habitats in the coming Succession Wars. Dwindling technology led to the abandonment of others. Until the Fourth Succession War, the only surviving Inner Sphere habitat stations were in the hearts of Successor States and dated to the Star League era.

Following the Fourth Succession War, the growing numbers of factory stations prompted a need for housing in space. Old stations were renovated and new ones were built to support the Inner Sphere's growing space-based industry. Beginning in the late 3050s, prosperity and recovered technology had reached such a level that a number of companies revived the idea of resort stations, with the greatest number found in the Free Worlds League. I think we had some plans here in the Lyran Alliance for resort stations, as did the Federated Suns, but that fit of genius by our noble masters known as the FedCom Civil War and the Jihad shelved those plans.

RECHARGE STATIONS

Perhaps the best known stations in the Inner Sphere during the Succession Wars and today are recharge stations, located at nadir and zenith jump points in many star systems. Actually, they're usually slightly inside the proximity limit to avoid the infinitesimal chance of a JumpShip arriving in the same location as the station. Some stations move beyond the proximity limit, but that's a rare event.

Recharge stations use solar sails, like those of JumpShips but on a grander scale, to store energy in massive batteries. The energy storage batteries can in turn deliver the energy to JumpShips either by microwave transmission to the JumpShip's solar sail or by direct hard lines to a docked JumpShip.

The advantage of recharge stations to JumpShip operators is sometimes lost on novice observers, since recharge stations do not usually allow JumpShips to recharge faster than the normal safe limit, which is 176 hours, give or take a hair. However, many stars visited by JumpShips cannot deliver a full charge in 176 hours at a standard jump point, with some dim stars requiring more than three additional days to recharge a ship. To merchants, who detest wasting even an extra six-hour shift in port and dread the accumulation of lost recharge hours over a fiscal year, the guaranteed 176-hour recharge from a recharge station's microwave transmissions can be worth the expense.

When I discussed JumpShips, I mentioned they could also recharge by a hard connection to a recharge station. This option bypasses some of the more delicate components of the K-F drive, enabling JumpShips to safely recharge in as little as 125 hours. That's more than two days faster than the normal safe minimum. The hard feed option is also convenient to merchants with a 200-year old JumpShip and a balky sail deployment mechanism, a common problem for the kilometer-wide, tissue-thin solar sails.

Recharge stations almost always have additional duties. They act as refueling platforms, cargo transshipment points, entrepôts and customs checkpoints. Recharge stations sometimes act as system defense surveillance stations due to the number of invaders that pass through zenith and nadir points, but this fact is so well known and the presence of a recharge station is such public knowledge that hostile forces will either use the other standard point—star systems rarely have two recharge stations anymore—or use a covert operation to disable the station's surveillance system. Destruction of a recharge station, despite the risk the station presents to invaders, is rare because recharge stations are also useful to the invaders. Many recharge stations survived the Succession Wars for this reason.

SHIPYARD STATIONS

Shipyards are probably the most critical stations in human-occupied space. Without them, JumpShips—which are stuck in space from birth to breaking—could not be built. They are sources of other spacecraft too, everything from WarShips to DropShips and other space stations.

Shipyards exist amid clusters of other stations, factories and habitats that support the shipyards' operations. While shipyards were primary targets in the First and Second Succession Wars for the same reason as JumpShips, this strategy was abandoned because it was working too well for all sides. During the Third Succession War and the first half of the 31st century, shipyards were mostly protected by an unwritten prohibition against destruction of lostech. Today, this prohibition is disappearing in the latest hostilities, as everyone in Alarion Province knows well.

Anyway, shipyards essentially fall into two categories: unpressurized and pressurized. Unpressurized shipyards, of which barely a hundred exist, are the most common type of yard. They typically consist of skeletal frames shielded by light-weight walls that provide micrometeorite protection and catch parts that get loose in freefall. Because they do not need to maintain atmospheric pressure in their construction and repair slips, unpressurized shipyards can scale to almost any capacity. Currently, only a handful of Inner Sphere unpressurized shipyards can handle ships larger than 500,000 tons.

Pressurized shipyards are considerably more productive and helpful to worker morale because the workers operate in a "shirt sleeve" environment instead of being burdened with bulky spacesuits. However, establishing a single, non-compartmentalized pressure vessel able to enclose something as large as a JumpShip or WarShip is quite an engineering challenge. Climate control and pressurization/depressurization systems are also daunting and high-maintenance items. As a result, pressurized yards tend to be smaller than unpressurized yards, with most able to hold DropShips and only a few able to hold JumpShips. To my knowledge, no Inner Sphere plans for a pressurized shipyard able to hold WarShips larger than a *Monolith* were ever completed.

SYSTEM DEFENSE STATIONS

System defense stations were common during the Star League and were established along hostile borders, typically at choke points like planetary orbit or zenith and nadir jump points. At those points, one way or another, hostile forces would likely pass the near-stationary platforms so the stations could actually shoot something or catch the "bad guys" with fighters. Defense stations were, of course, primary targets in the Succession Wars and often turned out to be target practice for mobile foes like WarShips. The few that survived were found in the hearts of Successor States. The 3050s naval arms race in the Inner Sphere prompted a new surge in defense station construction, though they remain rare. And they're dwindling again.

One of the problems plaguing defense stations is lack of interstellar mobility. Stations are generally built on site from DropShip-delivered components and remain in a star system until they are scrapped or destroyed in battle. Federated-Boeing Interstellar hoped to bypass this problem with its (supposedly) JumpShip-mobile *Capitol*-class defense station, and the company modified

HOW NOT TO BOARD A GRAVDECK

Periodically, some luminary gets the idea that one can step or drop into a gravdeck without the assistance of transfer cars, usually coming to this conclusion because of some misunderstanding of zero-G and centripetal "gravity." They think they can "hover" until they start running up to speed.

This is uniformly a bad idea. A small gravdeck, say three rpm and a hundred meters in diameter, has a floor speed of 56kph relative to the spacecraft around it. Big gravdecks are faster—the *Olympus*'s deck spins at 275kph. Dropping or stepping onto the gravdeck from a stationary start will often result in fatal collisions with furniture, walls and other gravdeck occupants. For comparison, most pedestrian collisions with automobiles tend to be fatal above 35kph.

Sometimes people who ignore the advice about floor speeds do so under the misapprehension that if they start in zero-G, then they can drift through the gravdeck and gently come up to speed. This is true if you ignore aerodynamic drag (the air in a gravdeck moves with the gravdeck), except for the "coming up to speed" part. In an ideal, depressurized gravdeck free of obstructions, one can hover because there is no real gravity to pull you to the surface. The "gravity" is a result of being constantly spun in a circle, so if you're not spinning, you're not experiencing "gravity." However, in practice, a floater's first contact with the surface is…bad. The experience is much like a pedestrian leaning against the side of a passing, high-speed train. No, gravity doesn't hold you against the train, but the experience is still going to be messy, and after that first collision with the gravdeck's floor, you'll be moving a bit and experiencing some "gravity," too. Which means more time colliding with the gravdeck's floor, and so on.

Those geniuses who try to sneak onto a gravdeck by slipping through the spaces between the bulkheads of a JumpShip that enclose the deck are usually the messiest examples of why non-standard gravdeck boarding procedures don't work. Clearance is minimal and the shearing effects of the stationary and moving walls on a human body are spectacular. Imagine being caught between a moving subway train and a tunnel wall with insufficient clearance. The whole zero-G effect won't save you there.

In either case, one can hope that these advanced students of physics do not kill anyone else and make a minimal mess in their demise. Seventy-five kilograms of stupid is enough to smear out over a good length of a gravdeck's exterior.

a JumpShip with the required adaptor to deliver the stations to customers. The customers never repeated the modification despite Federated-Boeing's eager offers, leaving the *Capitol*s stranded in their home star systems. Other defense station manufacturers have not bothered trying to make their stations strategically mobile. Reasons varied, but the proliferation of WarShips and assault DropShips is the most common explanation. Why build a defense station when you can build a mobile, more versatile spacecraft?

CARGO SPACE STATIONS

Often quite similar to a habitat station is the cargo station, or customs platform. Many space stations—especially recharge stations—are optimized for cargo and passenger transfer, inspection, and all the other usual customs roles applied to interstellar travel. But when a system finds its recharge stations unsatisfactory for these duties, a space station is generally placed in planetary orbit to serve in these roles. These stations thus tend to resemble habitat stations, but with greatly enlarged cargo capacity.

SPACE STATION ODDITIES

An interesting question: was Federated-Boeing inspired by Wolf's Dragoons when it came to the *Capitol*? The Dragoons' famous *Hephaestus* Station is a modular space station delivered to its destinations by JumpShips—usually one large JumpShip can carry all the modules—which are then plugged together on-site. Federated-Boeing skipped the on-site assembly by keeping the *Capitol* under the 100,000-ton capacity of a JumpShip docking collar, but the aerospace community continues to speculate about the reported similarity of the K-F boom extension in the *Capitol* to the *Hephaestus*.

Though that approach to station delivery might seem convenient, it's extremely expensive, on par with DropShips rather than conventional space stations. The usual methods of space station construction are either construction on-site by local industries, or shipping in much smaller modules by DropShip from a central facility.

Of course, making a space station that can be carried by a JumpShip leads to another group of oddball space stations: jump-capable ones. Though a number of stations have been labeled as jump-capable, they are universally just normal JumpShips or WarShips that have been given a stationary duty, sometimes overgrown with additions and expansions. Honestly, conventional JumpShips meet the definition of space stations because 99.9 percent of the time they hover at standard jump points like a recharge station and hardly maneuver on their own except to dock with another vessel. Their only significant movement is via hyperspace to another star.

SPACE STATION LOCATIONS

Space stations are most commonly located at LaGrange points. I talked about LaGrange points a few minutes ago, so I shouldn't have to repeat much of it. Anyway, space stations usually circle a LaGrange point in a "halo" orbit, which might be something you want to look up before Dr. Readly's next exam. Federated-Boeing Interstellar's Galax Megaplex is located at the L1 point between the planet Galax and its moon and includes nearly fifty space stations of various sizes that support the Megaplex's key occupants: shipyards.

Some stations are also found at zenith and nadir points, which are a trickier matter, as I discussed earlier for JumpShips and satellites. Recharge stations are almost exclusively found at standard jump points. Other stations are located in planetary orbits, most often fairly low, like four hundred to six hundred kilometers. These low orbits are not stable for more

than a few decades (and sometimes only months, if much lower than four hundred kilometers) due to a miniscule degree of atmospheric drag close to a planet. Station-keeping fuel expenditures are periodically required, though at nowhere near the frequency of zenith/nadir point stations. Popular low orbits are generally around a planet's equator, which allows convenient interception of space stations by DropShips and shuttles launching from the planetary surface, but some, like resorts, defense stations and science platforms, sweep over the poles or at high angles to the equator.

Least frequently, space stations are found in a geosynchronous orbit around a planet, which is an equatorial orbit selected at an altitude such that the length of time needed to complete an orbit is equal to the length of time needed for the planet below to rotate. This makes the space station appear to hover over a particular spot on a planet. While these orbits are exceptionally useful to satellites, they tend to be in the middle of radiation belts trapped by a planet's magnetic field, which inhibits external operations by the station's crew.

It should be noted that space stations typically have station-keeping drives comparable to those of JumpShips, which means stations can get around a star system pretty good when they need to. They can't get around between stars very well, but attackers shouldn't get too complacent about the location of a battle station in a star system.

GRAVDECKS

I skimmed over this topic when I was talking about JumpShips and WarShips. Now it's time for the details on gravdecks.

To an extent, space stations are defined by their gravdecks, the rotating ring-shaped decks that simulate gravity through centripetal forces. Stations can mount larger, more useful, more habitable gravdecks than any other type of spacecraft. Why does size matter for gravdecks? It's not all about elbow room. After all, a JumpShip's hundred-meter diameter gravdeck is effectively a deck four to ten meters wide and about 314 meters long—enough room for one hundred to two hundred full-sized staterooms. No, the issue is the human inner ear.

Gravdecks follow a number of conventions for their use, depending on whether they are small or large. "Small" or "large" is defined by the vulnerability of the human inner ear to movement within a rotating frame of reference. The rule of thumb is that few humans will adapt to gravdeck rotational speeds above three revolutions per minute (rpm) unless they sit perfectly still—turning one's head or moving rapidly in high-spin gravdecks confuses the inner ear with the Coriolis effect and produces nausea. People can adapt to gravdecks at one to three rpm, but the key word is "adapt"—casual visitors may not have a chance to do so. At one rpm and less, few visitors and regular users of gravdecks will notice (due to their inner ear, at least) that the "gravity" keeping them on the floor is actually created by spin.

With the biology established, let's move on to a matter of physics: the "gravity" generated by a gravdeck is related to the deck's size and speed. A larger, faster gravdeck generates more gravity. Larger gravdecks can use lower speeds to generate the same gravity as smaller gravdecks. The physics approximation is that you get 1G (9.8m/s/s) from an 1,800-meter diameter gravdeck at one rpm. To get 1G from a smaller gravdeck, you need to spin faster. Two rpm will give you 1G from a 450-meter diameter gravdeck, while three rpm allows a 200-meter 1G gravdeck. If the gravdeck has a yet lower diameter, the preference is to keep the speed at two or three rpm and accept lower gravity rather than risk turning the gravdeck into a "puke wheel," "vomit mill," "stomach pumper," or any of the other colorful names spacers reserve for fast-spinning gravdecks. Thus the small and large gravdecks are separated by whether they can generate 1G at three rpm or less (or about 200 meters), and some spacers won't even consider gravdecks "large" unless they're over a thousand meters in diameter.

Small gravdecks, particularly the forty- to one hundred-meter sorts found on JumpShips, are thus mostly useful for—excuse me—"dining and defecating," as spacers sum it up. In other words, these little gravdecks mostly serve as lounges. The low simulated gravity allows a normal meal instead of food-in-a-tube or those weird low-crumb, high-cohesivity recipes. It also avoids the trouble of the zero-G toilet, which, after eleven centuries of development, still stinks, if you'll pardon the pun.

Now, I did say keeping the inner ear still would avoid upset stomachs, so you might think that sleepers should not be bothered by the spin. That's true, but putting crew quarters in a small gravdeck is only helpful for crew morale, not crew health. Bed rest under spin-generated gravity creates the same bone degeneration found in zero-G. Exercise facilities may also turn up on small gravdecks, though they tend to be stationary exercise machines rather than active sports facilities like a racquetball court. There is a health benefit to exercising in the limited gravity of a small gravdeck. I'm told bones are better stressed and reinforced by impact exercises under gravity, like using a treadmill.

Large gravdecks, the kind found on space stations and large WarShips, are another matter. These can readily simulate 1G without disturbing many occupants and visitors. Space stations can thus put entire habitats, shopping plazas, parks and sports facilities into their gravdecks. The *Olympus*-class recharge stations are famous for their 1,200-meters-in-diameter gravdecks, which include all those facilities and more. At these scales you realize most of the mass of the gravdeck is not in the deck's structure, but rather in the spin and balance mechanisms and the transfer mechanisms.

Space stations also have an easier time incorporating gravdecks than their more mobile aerospace siblings. A space station can be built to almost any geometry with no concern for a K-F drive core, ammunition feeds, power lines, data cables or anything else that must run through the center of a JumpShip or WarShip. Similarly, space station gravdecks rarely need to worry about high acceleration. Space station gravdecks therefore can be built with simple systems for transferring people to and from them, such as long elevator spokes to a slow-spinning hub. JumpShips and WarShips generally cannot spare the volume or passage room for such elevator spokes and must use "subway" systems of transfer cars paralleling the gravdeck's track.

FUEL

I saved this bit for last, since it's applicable to JumpShips, WarShips, and space stations. And aerospace fighters, small craft, DropShips, some satellites, and many other spacecraft. That topic is fuel, and pretty much all modern spacecraft use the same fuel: hydrogen. Plain old diatomic hydrogen, atomic mass 2, not even

one of the heavier isotopes, always stored in liquid form at very cold temperatures and a mere 71 kilograms per cubic meter. Too bad liquids are so incompressible, or aerospace fighter designers would have an easier life. Designers of large craft don't have the elbowroom restrictions of their smaller cousins.

Anyway…I've been chastised for flippantly using the term "fuel" with respect to hydrogen on spacecraft but, hah, no I was correct. Most of the time. See, a fuel is something that provides energy for an engine. That might sound obvious, but hold on until you come to this rocketry term: reaction mass. In rockets, the reaction mass is something you throw out your tailpipe to go in an equal and opposite direction. In chemical rockets, fuel and reaction mass are the same thing: you burn the fuel, which produces very hot exhaust gas that flies out the tailpipe. In large fusion rockets operating in heat-expansion mode, this is also the case. Hydrogen is the fuel that is fused to produce a very hot gas, mostly helium, which is blown out the tailpipe.

However, you can see the difference between fuel and reaction mass in jump jets and lightweight aerospace fighters. The fuel in both those cases is hydrogen, which is fused in the reactor. In jump jets, the reaction mass is an entirely separate substance, often air or sometimes some bottled hydrogen or mercury, which are heated indirectly by energy from the reactor. In fighters, a similar system heats hydrogen that never went through the reactor. As fighters get more massive, they maintain their consistent propellant consumption by increasing exhaust temperature, to the extent that the heaviest fighters are augmenting their hydrogen reaction mass with burned fuel—waste helium—from the reactor. Larger vessels in "tactical" engine operation use larger and larger fractions of burned fuel until they're using almost no additional reaction mass.

That's some hair splitting that slipped off topic…anyway, about the fuel for modern spacecraft. With the exception of some satellites and maybe the chemical reaction control systems of some fighters, the fuel of choice is hydrogen. Hydrogen is extremely plentiful in the universe, representing about three quarters of every atom in the universe. So, how does it get in spacecraft?

Very often, it's simply a matter of converting a planetary hydrogen resource—water especially—into hydrogen and filling up the fuel tanks and some spare cargo space in a DropShip. DropShips heading to JumpShips can deliver some hydrogen to the JumpShip to keep the JumpShip topped off, assuming there's no convenient space station at the jump point. Such jump point space stations will often build up tens of thousands of tons of hydrogen in their cargo bays for visiting vessels.

Those of you from water-poor worlds might be appalled to think of your water being wasted in space but very few planets are actually so deficient in water that they cannot spare a few thousand tons out of their trillions to the spacecraft that visit them annually. Like I said in the first half of this lecture, "water-poor" worlds are often "worlds deficient in easily purified water." The high-energy electrolysis of water to produce hydrogen is an expensive means of producing the millions of tons of water a city might need on a weekly basis, but it's cost effective for producing a few thousand tons of pure hydrogen for spacecraft.

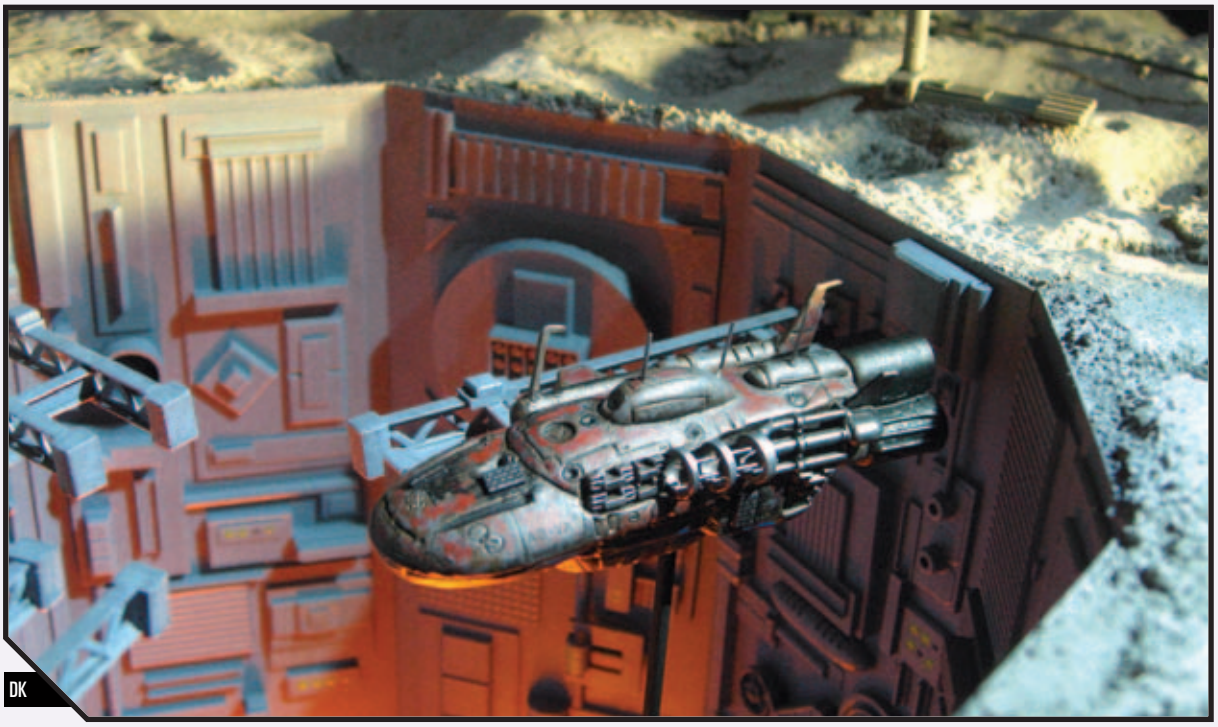
Some planets are still dodgy about sharing their water supplies and not every system can spare DropShips for regular supply runs to JumpShips, so some systems turn to comets, which are stuffed with hydrogen-bearing compounds like water, ammonia, and hydrocarbons. The same processes that gave humanity the Ryan Ice Cartel's eight cubic kilometer icebergs from comets sometimes provides vast, if not cheap, amounts of hydrogen.

In a pinch, clever engineers on spacecraft can even rig a thermal still to separate out dust and other impurities from cometary ices, then run the impure water through life support equipment, which often includes some water "cracking" capacity. It'd be enough to keep the reactors running, if not provide a lot of reaction mass.

What spacecraft don't do is dip into gas giants for a quick refill. The gaseous, impure hydrogen of gas giants would need all the same processing equipment as cometary hydrogen extraction, and more: a means of collecting, compressing, and liquefying the purified hydrogen, plus all the modifications needed to send a ship slamming into the atmosphere of a gas giant. Even with the awesome hull materials used today, ships could not survive an orbital velocity passage through the upper fringes of a gas giant atmosphere—all that gravity makes orbital velocity so much higher on gas giants—so you have to brake under thrust and gently enter the atmosphere of the gas giant. Only aerodyne DropShips begin to be suited for this—Spheroids would spend hours and days hovering on thrust provided by the fuel they're trying to collect—but even so, it's much easier just to visit a comet and hack out some water ice boulders.

CONCLUSION

There you go for today, the rest of the unsung workhorses of the modern universe. Well, no, these were the more exciting ones. If I know Dr. Readly, though, he's not going to give you a research paper on *McKenna*-class WarShips, even though he will spend the next two lectures awing you with his collection of WarShip holos and vids. No, you're going to be covering General Motors Ultra-Super-Whatever-Maxi spaceport crawlers and FedBoeing Navigation Beacon floaters, so I hoped you took notes in the first half.



An ancient Avatar*-class WarShip undergoes extensive refit and repairs at the Ruins of Gabriel.*

The unit construction rules described in *TechManual* covered the range of *BattleTech*'s most common battlefield and support units, while *Tactical Operations* covered Advanced Support Vehicle construction: Satellites, Rail, Large-sized Airships and Naval Vessel Support Vehicles, as well as Mobile Structures.

The following section covers Advanced Aerospace units: JumpShips, WarShips and Space Stations. As these rules can be fairly math-intensive, designers are encouraged to do all work on scratch paper before committing the resulting unit's specifications to the appropriate blank Record Sheets.

These rules should be considered the standard rule set for advanced aerospace unit design in the same fashion as the *TechManual* rules covered the basic rules for constructing tournament-legal units. These rules do not delve into any experimental options that may be available in the equipment section of *Tactical Operations* (starting on p. 274, *TO*).

THE BASICS OF ADVANCED UNIT DESIGN

Advanced unit construction relies on three primary factors: unit type, technology base and weight. The notes below explain and expand on these factors.

Throughout these construction rules, the term "unit" refers to a single advanced unit for *Strategic Operations* game play. A unit may be a single Space Station, a single JumpShip or a single WarShip.

UNIT TYPE

The advanced units presented here come in a range of unit types that largely determine their core construction rules, maximum weight allowances, structural designs and what equipment they may mount. These features are broadly outlined below. Because so much is influenced by the unit's type—including its core construction rules and Record Sheet—this factor must be decided upon first in the design process.

Advanced Aerospace Units

Space Stations, JumpShips and WarShips represent the largest commonly seen spacecraft in the *BattleTech* universe. As their construction is largely similar to that of other aerospace units (see pp. 180-199, *TM*), the construction rules for these units are grouped together in their own section.

Space Stations: Space Stations (including recharge stations,

habitats and orbital factories) are large and relatively immobile spacecraft that range from 2,000 to 2,500,000 tons in weight. These units use the Aerospace Unit construction system, may only operate in space, and rely on fusion engines for power.

JumpShips: JumpShips range from 50,000 to 500,000 tons in weight. JumpShips use the Aerospace Unit construction system. Like Space Stations, JumpShips may only operate in space and are fairly immobile, relying on fusion engines and jump sails for power.

WarShips: WarShips range from 100,000 to 2,500,000 tons in weight. WarShips use the Aerospace Unit construction system. Like Space Stations and JumpShips, they may operate only in space, and rely on fusion power and energy sails, but unlike these other units, WarShips are mobile and combat capable.

TECHNOLOGY BASE

In *BattleTech*, all units broadly fall into one of two available technology bases: Inner Sphere or Clan. (Mixed technology bases are possible, per the *Advanced Construction Options* starting on page 376 of *Tactical Operations*, but will not be covered here.) Purely Inner Sphere advanced units may only use Inner Sphere equipment, while purely Clan advanced units may only use Clan equipment. Many standard components, however, such as armor, control systems, engines and heat sinks, are considered universal and so may be available to both technology bases.

Technology Rating

In the Weapons and Equipment Tables used for creating units in *TechManual* and *Tactical Operations*, all items receive a Technology Rating in addition to a technology base. This rating (expressed as a series of letter grades that define the level of technology and its availability through the major eras of *BattleTech* history) helps to define the item's level of sophistication and may be used to help standardize the level of advancement the unit demonstrates for purposes of era-based campaigning. An item's Technology Rating typically has no direct bearing on advanced unit design.

Omni Units

Space Stations, JumpShips and WarShips cannot be built as Omni units under these rules (see *Omni Technology*, p. 19, *TM*).

WEIGHT

The advanced units described in these rules use the tonnage standard, with the weight ranges legal for game play described above under *Unit Type*.

For purposes of construction, though the term "weight" is typically used, it reflects the mass of items and components rather than a weight based on gravity.

Weight and Unit Classes

The varied nature of these advanced units creates a different range of weight and unit classes than most other unit types covered in *TechManual*. Still, depending on the unit's weight and type, many advanced designs can be classified along similar lines, though unusual specializations and such remain possible within the weight limits of any given design.

Space Stations: Classed as a Large-sized aerospace unit, Space Stations have a broad range of sizes and are commonly used as jump point recharging or refueling bases, local defense outposts, observation platforms in near orbit, habitats or factories. The size of the station rarely determines its function, and so military or civilian stations can exist in all sizes.

JumpShips: Regardless of their size, JumpShips are straight transport units, meant for the interstellar transport of DropShips and Small Craft above any and all other concerns. Larger JumpShips tend to carry more DropShips and incorporate amenities for extended space voyages, making them ideal for long pleasure cruises and military campaigns alike, while smaller ones are less expensive and more apt for raiding forces and light commercial travel. Few JumpShips are armed or heavily armored, though some military designs and exploration models have been known to carry weapons to deal with pirates and other hostile boarding parties.

WarShips: Another aerospace unit type is the WarShip. Essentially a combat JumpShip with engines for in-system transit as well as interstellar hops, WarShips bristle with armor and weapons—including powerful capital-class weapons—and can be used in a broader range of roles than JumpShips. Typical WarShip roles include corvettes for picket defense and anti-DropShip work, destroyers for interception and attack, frigates and cruisers for faster and heavier attack missions, carriers and transports for fighter and/or DropShip support, and battleships for full-on assault. The role of a WarShip typically influences its weight as well, with lighter ships falling into the corvette and destroyer roles, while heavier WarShips commonly serve as carriers, transports or battleships.

SPACE

Under these rules, an advanced unit's size and type determine its equipment capacity and weapon limits. These limits are largely based on the construction rules the unit uses.



Cameron-*class* Ulric Kerensky *(Clan Wolf (in-Exile))*

DESIGNING ADVANCED AEROSPACE UNITS

The following basic rules cover the construction of advanced aerospace unit types (specifically, Space Stations, JumpShips and WarShips). Despite their range of types, these advanced units follow six simple steps in design, each of which is described in detail later. In brief, these steps are as follows.

Step 1: Design the Chassis—Determine the advanced aerospace unit's type, its tech base, its weight and (for select units) any Structural Integrity.

Step 2: Install Engine and Control Systems—Determine the advanced aerospace unit's acceleration, engine weight, control components, fuel and (for some units) its Structural Integrity.

Step 3: Add Armor—Determine type, amount and weight of armor (if any), and allocate armor points.

Step 4: Add Heat Sinks—Determine number and weight (if necessary) of the advanced unit's heat sinks.

Step 5: Install Weapons and Equipment—Add weapons and other equipment to the advanced unit.

Step 6: Complete the Record Sheet.

The above steps are a framework for designing an advanced aerospace unit. The actual process—particularly after the chassis, engine and control systems are determined—can involve a bit more flexibility as weapons, armor and heat sinks are balanced for their best fit in terms of tonnage and weapon slots. For instance, some designers might wish to assign armor after the weapons and heat sinks are established, to maximize firepower over protection. Others may want to add weapons before adding more heat sinks, to see if those that come free with the engine are sufficient for the unit's needs.

To assist in this effort, the designer may find it useful to make copies of an appropriate Blank Record Sheet (in the back of this book) to visually arrange the placement of weapons and equipment while tracking the use of weight on a piece of scratch paper. Alternatively, designers with access to a PC and the appropriate *Heavy Metal* software can use it to develop their advanced unit electronically.

Terminology: For the sake of simplicity, any reference under these rules to *advanced aerospace units* covers Space Stations, JumpShips and WarShips. Where a rule applies to a specific advanced aerospace unit type, such units will be noted.

STEP 1: DESIGN THE CHASSIS

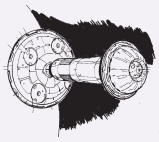
The first step in creating an advanced aerospace unit is choosing the unit's chassis. This step establishes some of the most basic aspects of its design, determining what type of unit it is, its technology base and its weight. These choices will restrict the designer's access to certain equipment and can also influence the weight of the unit's structural integrity.

CHOOSE ADVANCED AEROSPACE UNIT TYPE

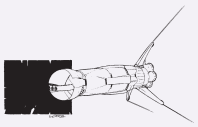
Advanced aerospace units come in three main types that can affect their design, maximum weight and engine types. Because of this, choosing the unit's type is the first key part of the chassis design process. Even the selection of a proper Blank Record Sheet for use in unit design hinges on the choice of unit type before any other component.

The Advanced Aerospace Unit Types Table (see p. 145) provides key data that applies to advanced aerospace unit design and game play. Each of the unit types covered by these rules is listed in the Aerospace Unit Type column, along with its Weight Range in tons (beyond which units of that type may not be constructed), Weight Incremental (the increments of tons that the unit may vary in weight within its range) and Restricted Terrain (areas impassable to units of that type in *Total Warfare* game play). The Advanced Aerospace Unit Record Sheet Table, meanwhile, determines which Blank Record Sheet must be used to record the construction of a new advanced unit of a given unit type.

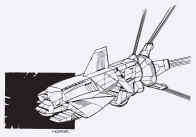
Joel is interested in building space stations capable of servicing or salvaging damaged DropShips and JumpShips. Dubbing this the Alliance *class, he notes from the Advanced Units Record Sheet Table that he will need a Space Station Record Sheet.*



Kate is interested in developing a JumpShip to support the movement of modest-size DropShip flotillas for the Clans. For her Odyssey*-class JumpShip, she prepares a JumpShip Record Sheet.*



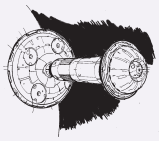
Lynn is planning to build a battleship for deep space combat. Naming its class after the Star League's founder, Admiral James McKenna, she copies a WarShip Record Sheet to plan her McKenna*-class vessel.*



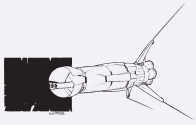
CHOOSE TECHNOLOGY BASE

Advanced aerospace units may be constructed using Clan or Inner Sphere technology bases. Advanced aerospace units may not be constructed as Omnis.

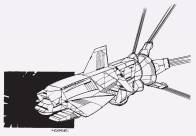
Joel assigns his Alliance *class station an Inner Sphere tech base.*



Kate plans her Odyssey*-class JumpShip for Clan use, and so assigns it a Clan tech base.*



Lynn wants to use her McKenna *in a pre-Clan campaign, and so picks an Inner Sphere tech base.*



ADVANCED AEROSPACE UNIT TYPES TABLE

Aerospace Unit Type	Weight Range (Tons)	Weight Incremental (Tons)	Restricted Terrain
Space Stations	2,000 to 2,500,000	500	Any non-Space
JumpShips	50,000 to 500,000	1,000	Any non-Space
WarShips	100,000 to 2,500,000	10,000	Any non-Space

ADVANCED AEROSPACE UNIT RECORD SHEET TABLE

Unit Type	Record Sheet	Weapon Arcs
Space Station	Space Station	Nose, Fore-Left/Right, Aft-Left/Right, Aft
JumpShip	JumpShip	Nose, Fore-Left/Right, Broadside Left/Right, Aft-Left/Right, Aft
WarShip	WarShip	Nose, Fore-Left/Right, Broadside Left/Right, Aft-Left/Right, Aft

CHOOSE WEIGHT

Depending on the advanced aerospace unit's type, its maximum (and minimum) weight varies greatly (as shown on the Advanced Aerospace Unit Types Table).

All advanced aerospace units described in these rules track their weight using the tonnage standard, and may be constructed as light as their lowest listed weight from the Advanced Aerospace Unit Types Table, to their maximum listed weight, increasing from the minimum in multiples of the unit's listed Weight Incremental. Because of the tonnage standard, the designer must first convert to tons any desired items with a weight listing in kilograms. To do this, divide the item's kilogram weight by 1,000.

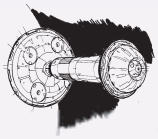
Regardless of the advanced unit's size and type, the total weight for its engine, equipment, armor and other components must not exceed the weight chosen. Any unspent weight left after the creation process is considered cargo space if the vehicle still has equipment slots to spare, or wasted weight if it does not.

Space

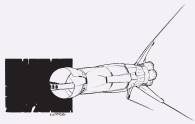
Space Stations, JumpShips and WarShips track space in much the same way as DropShips and Small Craft do (see p. 183, *TM*), with a base limit in the number of weapons they may mount per arc. For JumpShips, the base limit is 12 weapons per each of the craft's 6 arcs (Nose, Fore-Left, Fore-Right, Aft-Left, Aft-Right and Aft). For Space Stations and WarShips, this limit is 20 weapons per each of the unit's 6 arcs. As with DropShips and Small Craft, these limits may be extended by the addition of expanded fire control systems.

Beyond these weapon limits, advanced aerospace units may mount any number of non-weapon items, with most counting only as weight and some counting as bays. Which items take up weapon slots and which do not is explained in the appropriate sections.

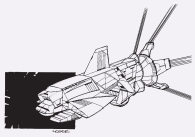
Joel opts to give his Alliance*-class Space Station a total weight of 100,000 tons—a modest size for a station, but he's not looking for a fortress here. Joel also knows that it will receive a base limit of 20 weapons per firing arc.*



Kate's Odyssey*-class JumpShip, she decides, will weigh 345,000 tons. As a JumpShip, the* Odyssey *begins with a limit of 12 weapon slots per arc.*



Lynn decides to place her McKenna*-class battleship just below the two-million-ton mark, and settles on a weight of 1,930,000 tons. Like Joel's* Alliance*, this vessel receives a starting limit of 20 weapon items per firing arc.*





Lola III*-class* Blizzard *(Clan Ghost Bear)*

ADVANCED AEROSPACE UNIT STRUCTURAL INTEGRITY WEIGHT TABLE

Advanced Aerospace Unit Type	Structural Integrity Value	Weight Formula*
Space Station Structural Integrity Weight	1	Space Station Weight ÷ 100
JumpShip Structural Integrity Weight	1	JumpShip Weight ÷ 150
WarShip Structural Integrity Weight	See *Install Engines, below*	See *Install Engines and Control Systems*, see below.

*Round up to the nearest half-ton

ALLOCATE WEIGHT FOR STRUCTURAL INTEGRITY

Space Stations and JumpShips may determine the weight of their internal structure (Structural Integrity) at this stage. However, WarShips—which rely on first determining their movement capabilities—may only allocate Structural Integrity weight after installing any engines.

Calculate Structural Integrity Weight

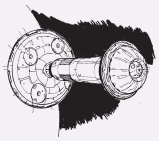
Space Stations and JumpShips are designed as stationary (station-keeping) spacecraft, so their Structural Integrity values are pre-set (at 1 point) and may not be changed (unlike DropShips and WarShips). The weight of this internal structure—which may be computed at this stage—is shown in the Advanced Aerospace Unit Structural Integrity Weight Table. The weight of a Space Station's Structural Integrity is equal to the station's mass divided by 100, while the weight of a JumpShip's Structural Integrity equals the JumpShip's total weight divided by 150. In both cases, Structural Integrity weight is rounded up to the nearest half-ton.

Structural Integrity Values are not assigned to a location on the unit's Record Sheet beyond the Structural Integrity area itself.

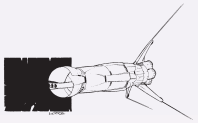
Tech Base/Rating: The Structural Integrity types for the advanced aerospace units in this section are equally available to vehicles of Clan or Inner Sphere tech bases. However, Structural Integrity components featured by these advanced units are incompatible with those of any different unit type. For example, a JumpShip cannot use the Space Station Structural Integrity weight formula.

Space: For all of the advanced aerospace units discussed here, the various types of Structural Integrity have no impact on the unit's equipment slot spaces.

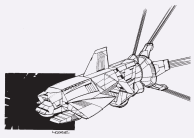
Joel's Alliance*-class Space Station has a total weight of 100,000 tons. Because it is a Space Station, he can determine that the weight for its Structural Integrity will be 1,000 tons (100,000 tons ÷ 100 = 1,000 tons). Also, as the* Alliance *is a Space Station, it receives a fixed Structural Integrity Value of 1.*



Kate's Odyssey*-class JumpShip, like Joel's* Alliance*, is an advanced aerospace unit, has a fixed Structural Integrity value and she can therefore compute its Structural Integrity weight at this time. Because it is a JumpShip weighing 345,000 tons, it receives a Structural Integrity weight of 2,300 tons (345,000 ÷ 150 = 2,300 tons). It also receives a fixed Structural Integrity Value of 1.*



Lynn's McKenna*-class battleship is a WarShip, and so is also exempt from requiring Support Vehicle Chassis and Engine values. But unlike the* Alliance *or the* Odyssey*, this advanced aerospace unit will have more than mere station-keeping thrust, which may prompt a larger Structural Integrity Value and thus a larger SI Mass. Lynn will not know these values until she installs the* McKenna*'s engine, and so she proceeds to do just that.*



STEP 2: INSTALL ENGINES AND CONTROL SYSTEMS

The second step in advanced aerospace unit design is the installation of the unit's engines and control systems. This step establishes the key factors in the unit's mobility, including the size and performance of its engine and the weight of the control systems the crew uses during operations.

INSTALL ENGINE

Each advanced aerospace unit carries one engine to power its movement, equipment and other integral components. The weight of this engine is determined by a simple formula based on the unit type chosen (Space Station, JumpShip or WarShip), as well as its desired acceleration (in Thrust Points). Advanced aerospace units do not use the military engines employed by BattleMechs and Aerospace Fighters, and so do not have Engine Ratings as such.

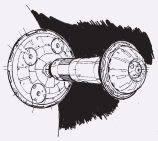
The Advanced Aerospace Unit Base Engine Formulae Table (see p. 147) provides the formulas of the various engine types available to advanced aerospace units. Determining the weight of an advanced aerospace unit's engine is simply a matter of multiplying the unit's total weight by its relevant factors, including its Engine Mass Factor (a value based on the unit type) and (if the unit is a WarShip) its desired Safe Thrust.

This final engine weight (rounded up to the nearest half-ton) includes not only the unit's engine, but any integral cooling systems and shielding necessary to operate the engine.

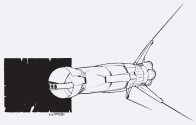
Advanced aerospace units invariably use Fusion engines.

Tech Base/Rating: The engine types presented in this section are available to advanced aerospace units made using either the Clan or Inner Sphere tech bases.

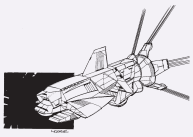
Space: The types of engines used by advanced aerospace units do not affect the unit's equipment slot space.



As a Space Station, Joel's Alliance *receives an Engine Weight Factor of 0.012, and may not select a Safe Thrust rate (Space Stations, like Satellites and JumpShips, use station-keeping drives only). With its total weight set at 100,000 tons, this means the* Alliance*'s station-keeping engines will weigh 1,200 tons (0.012 [Engine Weight Factor] x 100,000 tons = 1,200 tons). Given its Structural Integrity weight of 1,000 tons, this leaves 97,800 tons left over (100,000 – 1,000 [SI Weight] – 1,200 [Engine Weight] = 97,800 tons).*



Kate's Odyssey*-class JumpShip has spent 2,300 tons of its 345,000-ton weight on Structural Integrity, leaving 342,700 tons remaining (345,000 – 2,300 = 342,700). Like Joel's* Alliance*, the JumpShip receives an Engine Weight Factor of 0.012 and may not choose a Safe Thrust because its drives are for station-keeping only. This provides the* Odyssey *with an engine weighing 4,140 tons (0.012 x 345,000 = 4,140), and 338,560 free tons remaining (342,700 tons – 4,140 tons = 338,560).*



Lynn's McKenna*-class battleship is a WarShip, and so unlike the* Alliance *or the* Odyssey*, this vessel will have more than a mere station-keeping thrust. In fact, Lynn assigns a Safe Thrust of 3 for this vessel, which provides a Max Thrust of 5 (3 Safe Thrust x 1.5 = 4.5, round up to 5). As a WarShip, the* McKenna *receives an Engine Weight Factor of 0.06. Combined with the vessel's 1,930,000-ton mass and its desired Safe Thrust, Lynn computes that this will produce a final engine weight of 347,400 tons (0.06 [Engine Weight Factor] x 3 [Safe Thrust] x 1,930,000 tons = 347,400 tons). This leaves 1,582,600 tons remaining (1,930,000 – 347,400 = 1,582,600 tons).*

DETERMINE FUEL CAPACITY

All advanced aerospace units require fuel. These units track fuel by Fuel Points or fuel tons (depending on conditions; see p. 34 for rules on tracking fuel use). The number of Fuel Points provided per ton is based primarily on the unit's weight, as shown in the Advanced Aerospace Unit Fuel Table, at right. Regardless of the advanced aerospace unit's type and weight, fuel may only be added in full or half-ton lots. Once a fuel capacity is established, an additional 2 percent of the fuel's total weight (rounded up to the nearest half-ton) must be applied to reflect the mass of the fuel tanks and pumps.

Also provided in the Aerospace Fuel Table is the Strategic Fuel Use Rating, which applies to all advanced aerospace units (as they employ heat expansion systems for sustained burns). This value sets how many tons of fuel the vessel consumes in a given day at a constant 1 G (2 Thrust Point) acceleration rate. This value may be multiplied by the craft's actual acceleration—in Gs—used during long-range transits as well.

ADVANCED AEROSPACE UNIT BASE ENGINE FORMULAE

Unit Type	Engine Mass Factor
Station-Keeping Drive (Space Station/ JumpShips)*	0.012
Maneuvering Drive (WarShips)*	0.06

Max Thrust Value (WarShips only)**
Safe Thrust x 1.5 (Round up)

*Station-Keeping and Maneuvering Drives may not be combined on a single unit, and only WarShips may mount Maneuvering Drives. Maneuvering Drive Safe Thrust is selected in whole numbers, not fractions. Maneuvering Drives may not have a Safe Thrust of less than 1. For lower thrust than 1, a WarShip must mount a Station-Keeping Drive** instead of a Maneuvering Drive (in this instance the WarShip moves as per a JumpShip [see p. 62])."

**Station-Keeping Drives do not receive a Max Thrust (their engines provide for station-keeping only, at 0.2 Thrust).

ADVANCED AEROSPACE UNIT ENGINE WEIGHT FORMULAE
Engine Weight (Space Station/JumpShips) = Engine Mass Factor x Total Advanced Aerospace Unit Weight
Engine Weight (WarShips) = Engine Mass Factor x Safe Thrust x Total Advanced Aerospace Unit Weight

ADVANCED AEROSPACE UNIT FUEL TABLE

Advanced Unit Mass	Fuel Points (per ton)	Strategic Fuel Use (tons/burn day)*
2,000 to 49,999	10	2.82
50,000 to 99,999	10	9.77
100,000 to 109,999	10	19.75
110,000 to 199,999	5	19.75
200,000 to 249,000	5	39.52
Over 249,999	2.5	39.52

*Space Stations and JumpShips burn one-tenth as much fuel per day to maintain station-keeping thrust

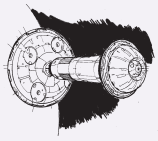
FUEL AND FUEL PUMP WEIGHT FORMULA
Total fuel and fuel pumps weight (advanced aerospace units only) = desired fuel tonnage x 1.02 (Round up to nearest ton)

Space Stations and JumpShips always use station-keeping drives, which have an effective Thrust of 0.1 G. These units consume only one-tenth as much fuel per burn day as the listed amount for their tonnage.

Tech Base/Rating: Fuel tanks and fuels are standardized, and equally available to advanced Support Vehicles of Clan or Inner Sphere technology bases. The fuel usage rates by all of the advanced aerospace units presented here remain the same regardless of the unit's tech base.

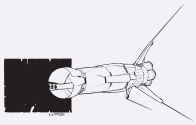
Space: The internal fuel tanks covered by these rules occupy no weapon or equipment slots on any advanced aerospace unit.

As an advanced aerospace unit, Joel's Alliance*-class Space Station must maintain a fuel reserve for its station-keeping drives. He decides to allocate 10,000 tons of fuel (100,000 Fuel Points; 10 Fuel Points per ton x 10,000 tons = 100,000 points) to the station. This will cost a total amount of 10,200 tons (thanks to the additional 200 tons' worth of fuel pumps; 0.02 x 10,000 tons = 200 tons). In checking the Advanced Aerospace Unit Fuel Table, Joel notes that the* Alliance *will consume this fuel at a rate of 1.975 tons per day at station-keeping (19.75 tons per burn-day for a 100,000-ton unit, divided by 10 for Space Station or JumpShip unit types = 1.975).*



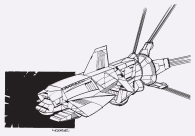
After the addition of its fuel tanks and pumps, the Alliance *now has 87,600 tons left over (97,800 – 10,200 [Fuel and Pumps] = 87,600 tons).*

Kate's Odyssey*-class JumpShip also requires fuel for its station-keeping drives. She decides that 1,000 tons (2,500 Fuel Points; 2.5 points per ton x 1,000 tons = 2,500) should be sufficient for the task. Thus, she must spend 1,020 tons in weight for the fuel and pumps (1,000 tons + (0.02 x 1,000 tons) = 1,020 tons). This leaves the* Odyssey *with 337,540 unspent tons (338,560 – 1,020 = 337,540 tons).*



In checking the Advanced Aerospace Unit Fuel Table, Kate also finds that her JumpShip will burn 3.952 tons of fuel per day at station-keeping (39.52 tons per day for a 345,000-ton unit, divided by 10 for Space Stations or JumpShips = 3.952).

Lynn decides to provide her McKenna*-class battleship with 1,600 tons' worth of fuel, or 4,000 Fuel Points (1,600 tons x 2.5 points per ton for a vessel 250,000 tons and over = 4,000 points). The weight of the fuel and pumps will be 1,632 tons (1,600 tons + [0.02 x 1,600 tons] = 1,632 tons), which will leave 1,580,968 tons unspent (1,582,600 – 1,632 = 1,580,968 tons).*



In reviewing the Advanced Aerospace Units Fuel Table, Lynn finds that the McKenna *will burn this fuel at a rate of 39.52 tons per burn day (at 1 G).*

DETERMINE STRUCTURAL INTEGRITY (WARSHIPS ONLY)

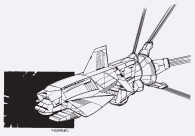
Once the weight and Thrust Points for a WarShip are determined, the designer can determine this unit's Structural Integrity (SI) value. This determines the overall strength of the vessel's internal structure or spaceframe.

Unlike the SI of a Space Station or JumpShip, a WarShip's SI may vary at the designer's option. At the very minimum, this value must be equal to the vessel's Maximum Thrust Rating, but the designer may—at his or her discretion—increase this value to as much as 30 times the vessel's Max Thrust. Higher values provide a more resilient frame, as well as a corresponding increase in armor capacity.

A WarShip's SI value also determines the weight it must spend on Structural Integrity. To find the weight of a WarShip's Structural Integrity (SI), multiply the SI value by the vessel's total weight, divided by 1,000, and round the final result up to the nearest half-ton. For example, a 600,000-ton WarShip with an SI of 50 would spend 30,000 tons on Structural Integrity (50 [SI] x 600,000 tons ÷ 1,000 = 30,000 tons).

Space: A WarShip's Structural Integrity does not affect its allotment of internal equipment space.

For her McKenna*, Lynn notes that the vessel's Max Thrust of 5 offers a possible SI value range between 5 and 150 (30 x 5 = 150). Because she plans the vessel for heavy combat, but also wants to leave tonnage for weapons and cargo, Lynn decides on an SI of 95.*



The 1,930,000-ton McKenna*'s Structural Integrity, Lynn then determines, will weigh 183,350 tons (95 [SI] x 1,930,000 tons ÷ 1,000 = 183,350 tons). This will leave the WarShip with 1,397,618 unspent tons (1,580,968 tons – 183,350 SI tons = 1,397,618 tons).*

DETERMINE K-F JUMP CAPABILITY (JUMPSHIPS AND WARSHIPS)

Only JumpShips and WarShips may incorporate a Kearny-Fuchida (K-F) jump drive. This drive system makes interstellar travel possible, and is directly tied into the vessel's total weight. JumpShips built using these rules may only make use of the Standard K-F drive, while WarShips built under these rules may only make use of a Compact K-F drive. (More advanced options, such as the experimental Sub-Compact K-F drive, are discussed in the Equipment section of *Tactical Operations*.)

The formula for finding the weight of a K-F drive is shown in the Kearny-Fuchida Drive Table below. All K-F drive weights must be rounded up to the nearest whole ton.

K-F Drive Integrity: In addition to computing the weight of a K-F drive, designers must also determine the K-F drive's Integrity, which reflects the jump system's ability to withstand damage. The formula for determining a K-F drive's Integrity is shown in the Kearny-Fuchida Drive Table below. As with the K-F drive's weight, K-F Integrity values are rounded up to the nearest whole number.

Jump Sail and Jump Sail Integrity: The final step for installing a K-F jump drive is adding a jump sail, the weight of which is derived from the vessel's weight, along with the Jump Sail Integrity, which reflects the sail's ability to withstand damage when unfurled. The formula for finding a Jump Sail's weight and its Integrity are both listed in the Kearny-Fuchida Table as well, and both values round up to the nearest whole number.

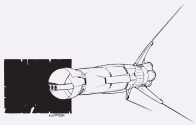
Space Stations with energy storage batteries may also carry a Jump Sail, which is used to collect energy for the batteries (rather than a jump drive). In such cases, the sail's weight and Integrity are computed like that of a sail for a JumpShip of equivalent size.

KEARNY-FUCHIDA DRIVE TABLE

Unit Type	K-F Drive Type	K-F Drive Weight	K-F Drive Integrity	Jump Sail Mass*
JumpShip	Standard	JumpShip weight x 0.95	1.2 + (K-F Drive weight ÷ 60,000)	30 + (JumpShip weight ÷ 7,500)
WarShip	Compact	WarShip weight x .4525	2 + (K-F Drive weight ÷ 25,000)	30 + (WarShip weight ÷ 20,000)

*Jump Sail Integrity = 1 + (Jump Sail weight ÷ 20)
Round all weights and Integrity values up to the nearest whole number.

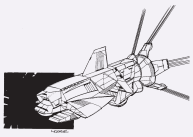
K-F Drive and Sail Limits: An advanced aerospace unit may mount only one K-F jump drive of any type, and one Jump Sail (or energy collection sail).



Kate's Odyssey*-class JumpShip receives a Standard K-F drive unit and a Jump Sail. With the vessel's weight of 345,000 tons, Kate finds that the drive itself will weigh 327,750 tons (345,000 tons x 0.95 = 327,750 tons). At that weight, the* Odyssey*'s K-F drive Integrity comes to 7 (1.2 + [327,750 K-F Drive tons ÷ 60,000] = 6.663, round up to 7).*

For the Odyssey*'s Jump Sail, Kate determines a weight of 76 tons (30 + [345,000 tons ÷ 7,500] = 76). This yields a Jump Sail Integrity of 5 (1 + [76 tons ÷ 20] = 4.8, rounded up to 5). On the record sheet, Kate notes both the K-F and Sail Integrity for her JumpShip.*

Subtracting the weight of the jump drive and Jump Sail from the Odyssey*'s remaining weight, Kate determines that she will have 9,714 tons left over (337,540 tons – 327,750 tons [K-F drive] – 76 tons [Jump Sail] = 9,714 tons).*



For her 1,930,000-ton McKenna*, Lynn must install a Compact K-F drive, which will weigh 873,325 tons (1,930,000 tons x 0.4525 = 873,325 tons). This produces a K-F drive Integrity Value of 37 (2 + [873,325 K-F tons ÷ 25,000] = 36.933, round up to 37).*

For the McKenna*'s Jump Sail, Lynn finds a weight of 127 tons (30 + [1,930,000 tons ÷ 20,000] = 126.5 tons, rounded up to 127). This provides the WarShip with a Jump Sail Integrity of 8 (1 + [127 Jump Sail tons ÷ 20] = 7.35, rounded up to 8).*

Subtracting the weight of the K-F drive and Jump Sail will leave the McKenna *with 524,166 tons left to spend (1,397,618 tons – 873,325 [K-F drive] – 127 [Jump Sail] = 524,166 tons).*



A Lola II*-class WarShip deploys for combat.*

ADVANCED AEROSPACE CONTROL SYSTEMS TABLE

Advanced Aerospace Unit	Control Systems Weight
Space Station	Tonnage x 0.0010*
JumpShip/WarShip	Tonnage x 0.0025*

*Based on total unit tonnage, round up to the nearest full ton.

ADD CONTROL/CREW SYSTEMS

Advanced aerospace units must have control systems, reflecting crew stations from which the unit is operated. These control systems provide sensors and navigation that are often distributed throughout the unit and controlled from one or two command centers. The weight of such systems is shown on the Advanced Aerospace Control Systems Table below.

Crew: All advanced aerospace units require a certain amount of crew to operate them. To determine the basic crew needs for each unit type, consult the Advanced Aerospace Unit Minimum Crew Table (see p. 147). The unit's crew must be equal to (or, at the designer's option, greater than) the sum of its minimum crew requirements (including any supplemental crew such as officers and those needed to man special equipment such as weapons, communications, kitchens and MASH theaters). Bay personnel—for vehicle bays and such—are not listed (the bays themselves incorporate a limited amount of bunk space for such personnel). Additional crew needs for the specific items listed do not have to be met unless and until the items are mounted (typically after Step 5), and any officer requirements must be computed after all crew are assigned.

Gunners are necessary only for items that require a Gunnery Skill roll to use in combat, and that have a range of more than 1 hex in *Total Warfare* game play. (Automatic defensive armaments like Anti-Missile Systems, A-Pods and the like require no gunners, nor do non-weapon items listed on the Weapons and Equipment Tables, such as Active Probes and ECM gear.)

Crew Accommodations: Unlike advanced Support Vehicles, advanced aerospace units *must* allocate weight to quarters for every crewman, as such quarters represent expansions on the unit's life support apparatus. Space Stations, JumpShips and WarShips require quarters for all crew and passengers, with standard procedure providing First Class Quarters (10 tons apiece) to officers and Second Class Quarters (7 tons apiece) to enlisted/non-officer crew. Because bays incorporate a limited

amount of bunk space into their design, bay personnel—those required for vehicle bays, 'Mech bays and so forth—need not be counted toward required accommodations.

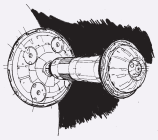
At the designer's option, the "standard procedure" for crew and passenger quarters need not be followed precisely; so long as all non-bay crew receive quarters, the needs of unit construction are satisfied. Designers may thus opt to equip a vessel with other quarter types instead, such as Steerage and Officer/First Class quarters in place of Standard crew quarters. For example, a standard Inner Sphere military DropShip with a crew of 9, plus 2 officers, might normally devote Standard crew quarters to its 9 crewmen and Officer/First Class quarters to its 2 officers. Clan military DropShips tend to be more spartan, and so may bunk their crew—officers and all—in Standard crew quarters.

Fire Control Systems: Unlike advanced Support Vehicles, advanced aerospace units use more sophisticated sensors by necessity, and so do not need to spend additional weight on fire control at this stage. However, advanced aerospace units that mount more weapons than their standard limits will need to spend additional tonnage on expanded fire control. This tonnage (if needed) can be calculated when installing weapons and other equipment in Step 5.

Tech Base: The control systems and crew accommodations covered by these rules are equally available to advanced aerospace units built using a Clan or Inner Sphere technology base.

Space: The installation of all crew quarters and control systems covered by these rules does not affect the amount of weapon slots available to an advanced aerospace unit.

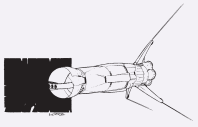
Joel's Alliance*-class space station, as an advanced aerospace unit, must assign some of its weight to control systems. Upon consulting the Advanced Aerospace Units Controls Table, he finds that the weight for these systems comes to 100 tons (100,000 tons x 0.001 = 100 tons).*



As a 100,000-ton Space Station, Joel calculates that his Alliance *will require a minimum of 65 crewmen (45 + [100,000 tons ÷ 5,000] = 65). Of these, 1 in 6 must be officers, and so 11 of these crewmen are identified as officers (65 ÷ 6 = 10.833, round up to 11). Though gunners and additional crew may yet be required, Joel knows about these needs already, and so assigns 54 Standard crew quarters (at 7 tons each) and 11 Officers' quarters (10 tons each) to the design, for a total of 488 tons in quarters ([54 x 7] + [11 x 10] = 488 tons). As an advanced aerospace unit, the* Alliance *need not assign slot space to these quarters.*

Between these quarters and the control systems, this will leave the Alliance *Space Station with 87,006 unspent tons remaining (87,600 – 100 [Control Systems] – 488 [quarters] = 87,012).*

Kate's Odyssey*-class JumpShip, as an advanced aerospace unit, must spend weight on control systems. Checking the Advanced Aerospace Unit Control Systems Table, Kate finds that this weight will come to 863 tons (345,000 tons x 0.0025 = 862.5, round up to 863 tons).*



In addition, the Odyssey*'s 345,000-ton size means it will have a minimum crew requirement of 24 (6 + [345,000 ÷ 20,000] = 23.25, round up to 24). Of these 24 crewmen, 4 must be officers (24 crew ÷ 6 = 4). Thus, Kate decides to spend 140 tons on 20 Standard crew quarters (20 quarters x 7 tons per = 140), and 40 tons more for 4 officer quarters (4 officers x 10 tons per). Combined with the 863 tons' worth of control systems, Kate computes that her JumpShip has 8,671 tons remaining (9,714 tons – 863 [Control Systems] – 140 [Crew quarters] – 40 [Officers' quarters] = 8,671 tons). Kate notes, however, that her crew needs may increase depending on any additional equipment she may decide to mount.*

ADVANCED AEROSPACE UNIT MINIMUM CREW TABLE

Minimum Crew Formula
Minimum Crew Needs = Base Crew Minimum + Minimum Gunners

Advanced Unit Type	Base Crew Minimum
JumpShip	6 + (1 per 20,000 tons)*
WarShip/Space Stations	45 + (1 per 5,000 tons)*

*Round up

ADDITIONAL CREW

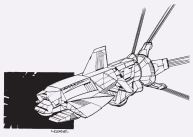
Non-Gunners	Minimum Crew Requirement
Communications Equipment (per ton, see p. 212, *TM*)	1
Field Kitchen (per item, see p. 217, *TM*)	3
MASH (per theater, see p. 228, *TM*)	5
Mobile Field Base (per item, see p. 330, *TO*)	5

Gunners	Minimum Gunners Requirement*
Standard Weapons	1 per 6 weapons
Capital Weapons	1 per weapon

Crew	Minimum Officer Requirement
5 or more Crew	(Total Base Crew + Total Gunners) ÷ 6 (round up)

*Inclusive to the crew (thus, for every 6 crewmen assigned, 1 is an officer)

Computing the weight of the McKenna*'s control systems, Lynn finds that these will weigh 4,825 tons (1,930,000 tons x 0.0025 = 4,825 tons).*



The minimal crew—before gunners—works out to 431 (45 + [1,930,000 tons ÷ 5,000] = 431). Of these, 72 must be officers (431 crew ÷ 6 = 71.8 officers, round up to 72). The quarters for these minimal crew needs will thus weigh 2,513 tons in Standard quarters (359 crew x 7 tons per), plus 720 tons in Officers' quarters (72 officers x 10 tons per).

The combined weight of the control systems and minimal crew quarters allotted to the McKenna *leaves the WarShip with 516,108 tons left over (524,166 tons – 4,825 tons [Control Systems] – 2,513 [Crew quarters] – 720 tons [Officers' quarters] = 516,108 tons).*

SPECIAL ENHANCEMENTS

Under these rules, any special physical enhancements—such as Environmental Sealing, hydrofoil capability and so forth—are already incorporated into the design of the advanced aerospace unit's chassis. Advanced units have no add-on equivalents to the MASC or Triple-Strength Myomer systems that BattleMechs may employ.

STEP 3: ADD HEAT SINKS

Like all other Large Craft, in Standard Rules advanced aerospace units operate on a "zero-net-heat principle" where the number of heat sinks installed provides a hard cap on the amount of heat such units may generate from all weapons fired in one turn. This means that, while advanced aerospace units need not mount enough sinks to cover all heat the unit may potentially generate in one turn, it should mount at least enough to effectively use some of its weaponry.

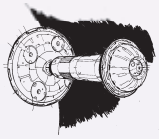
Though determining an advanced aerospace unit's heat sink needs is dependent on many factors, this stage can help provide designers with a guide toward determining how many heat sinks the unit receives initially (if any), as well as preparing the unit in advance for a desired selection of weapons. Alternatively, the designer may wish to skip this step until after all weapons and equipment are selected, in order to better allocate the unit's remaining tonnage.

Thanks to the design of their fusion engines, advanced aerospace units receive a certain number of "weight-free" heat sinks that are considered part and parcel with their power plants. To find the number of weight-free sinks provided by a given advanced aerospace unit type, consult the Advanced Aerospace Unit Heat Sinks Table, below.

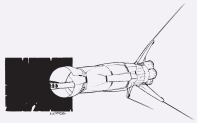
Advanced aerospace units of any type may be equipped with either standard or double heat sinks. A unit may not combine different heat sink types on the same design; if an advanced aerospace unit selects double heat sinks, then all of its free sinks are also double heat sinks.

Tech Base: Standard (single) and double heat sinks are equally available to advanced aerospace units of Clan or Inner Sphere tech bases. (Though units built with an Inner Sphere tech base may use only Inner Sphere double heat sinks, and Clan-made units may use Clan double heat sinks, the distinction between them in the design of advanced aerospace units does not noticeably affect the amount of tonnage or space used.)

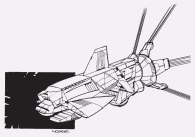
Space: An advanced aerospace unit's heat sinks do not affect the amount of weapon slots available to the unit.



Joel knows that his Alliance*-class space station will have a certain number of weight-free heat sinks (which may be standard (single) heat sinks, or double-strength sinks at his option. Applying the Weight-Free Heat Sinks formula shown in the Advanced Unit Heat Sinks Table, Joel finds that the* Alliance*—with its 1,200-ton engine—will receive 93 weight-free sinks (45 + √ (1,200 x 2) = 93.99, rounded down to 93). Because he sees his* Alliance *as using less sophisticated technologies across the board, but also sees it as a well-armed station in a pinch, Joel selects standard heat sinks, and decides to mount an additional 307 of them (at 307 tons), for a final count of 400 heat sinks (307 added sinks + 93 weight-free sinks = 400). This leaves the* Alliance *with 86,705 unspent tons (87,012 – 307 = 86,705).*



For her Odyssey*-class JumpShip, Kate also notes that she may receive a certain number of weight-free sinks with its engine, and that the vessel may mount either standard or double heat sinks. Applying the Weight-Free Heat Sinks formula, she finds that the* Odyssey*'s 4,140-ton engine will provide the vessel with 135 free sinks (45 + √ (4,140 x 2) = 135.99, round down to 135). Deciding that the JumpShip will not be that heavily armed, Kate decides that single heat sinks will be sufficient and spends only 1 ton on added sinks, for a total of 136 standard heat sinks. The* Odyssey *now has 8,670 unspent tons remaining (8,671 – 1 = 8,670 tons).*



With its massive 347,400-ton engine, Lynn's McKenna*-class WarShip receives 878 free heat sinks according to the Weight-Free Heat Sinks formula (45 + √ (347,400 x 2) = 878.55, round down to 878). Because she is building a vessel meant for heavy combat, even choosing double heat sinks (which she does do) won't measure up to the kind of heat management Lynn anticipates the ship will need. She thus elects to mount an extra 5,447 double heat sinks (at a cost of 5,447 more tons in weight), for a final heat sink count of 6,325 (5,447 added sinks + 878 weight-free sinks = 6,325 total sinks). Because these are double heat sinks, the* McKenna *will be able to vent 12,650 total heat points per turn (6,325 sinks x 2 points per sink = 12,650 points). The* McKenna *now has 510,661 unspent tons remaining (516,108 tons – 5,447 tons = 510,661 tons).*

ADVANCED UNIT HEAT SINKS TABLE

Advanced Aerospace Unit Type	Min. Heat Sink Requirement	Weight-Free Heat Sinks
Advanced Aerospace Units (All)	None	45 + √(Engine Tonnage x 2)*

*Round down

STEP 4: ADD ARMOR

Advanced aerospace units—whether built as unarmed JumpShips or as formidable WarShips—require armor to protect their internal structures and critical components against debris, routine wear and tear, and combat. The range of armor available and its effectiveness varies with the unit's weight and its technology base.

The maximum amount of armor points an advanced aerospace unit may mount is based on its weight and unit type. This value applies to Clan and Inner Sphere advanced units, regardless of the Tech Rating used, and is established in tons of armor—rather than in armor points—for advanced aerospace units.

Using the Armor Diagram on the advanced aerospace unit's appropriate Record Sheet, mark out any excess armor circles to indicate the number of armor points that protect each part of the unit's body. Armor circles for a given location appear in the appropriate unshaded parts of the diagram.

Under these rules, designers may not mix armor types on an advanced aerospace unit, and may only use armor types listed in the Advanced Aerospace Unit Armor Table (see below).

Advanced aerospace units mount armor per the same basic rules as other aerospace units, but use a different damage scale known as capital-scale. Capital-scale armor and damage is generally reserved for JumpShips, Space Stations and WarShips, to more easily track the incredible amount of armor points possible for these super-large units. Each point of capital-scale armor is equal to 10 points of standard-scale armor.

The maximum number of armor tons (*not* points) an advanced aerospace unit may receive is shown in the Maximum Armor column of the Advanced Aerospace Unit Armor Maximums Table. This value is always rounded down to the nearest half-ton.

Advanced aerospace units include a certain degree of armor within their very structure (which does not count toward the tonnage of armor that may be added), and thus do not have a minimum armor requirement. The amount of "free" capital-scale armor (per facing) an advanced aerospace unit receives is based on its Structural Integrity value. The formula for computing this free SI-provided armor is shown on the Advanced Aerospace Unit Armor Table, and rounds normally (rounding up on .5), to a minimum value of 0.

Advanced aerospace units use the Advanced Aerospace Unit Armor Weights Table to find how many capital-scale points of armor are provided per ton, based on the unit's total weight and armor type chosen. Each armor type's points-per-ton value is given as two numbers separated by a slash. For Inner Sphere-made advanced aerospace units, the number left of the slash is the number of capital-scale points provided per ton of armor; Clan-made units use the number to the right of the slash.

To find the tonnage of a given number of capital armor points *beyond* the free SI-provided armor, divide the total desired number of capital-scale armor points by the number of points per ton (based on the armor type and tech base used) and round the result up to the nearest half-ton.

Tech Base/Rating: Advanced aerospace units built with an Inner Sphere technology base may only use standard Inner Sphere armor, as well as Inner Sphere improved ferro-aluminum, ferro-carbide and Lamellor ferro-carbide armors. Advanced aerospace units built with a Clan tech base may only use the Clan equivalents of these armor types.

Space: Under these rules, no armor type available to an advanced aerospace unit reduces its equipment space.

ADVANCED AEROSPACE UNIT ARMOR TABLE

ADVANCED UNIT ARMOR MAXIMUMS		
Unit Type	**Maximum Armor (tons)***	**Armor Facings**
JumpShip	Structural Integrity Mass ÷ 12	Nose, Fore-Left, Fore-Right, Aft-Left, Aft-Right, Aft
Space Station	Structural Integrity Mass ÷ 3	Nose, Fore-Left, Fore-Right, Aft-Left, Aft-Right, Aft
WarShip	Structural Integrity Mass ÷ 50	Nose, Fore-Left, Fore-Right, Aft-Left, Aft-Right, Aft

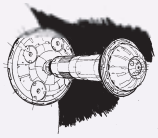
*Round all values down to nearest half-ton

Advanced Aerospace Unit Armor Table (Capital Scale)
Free SI-Provided Armor Value (Points per Facing) = Unit's Structural Integrity Value ÷ 10*

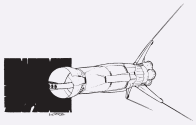
*Round normally (up on .5); Free SI-provided armor does not count against the unit's maximum armor limits

ADVANCED AEROSPACE UNIT ARMOR WEIGHTS				
	Points per Ton by Armor Type [Inner Sphere/Clan]*			
Advanced Aerospace Unit Weight	**Standard**	**Imp. Ferro-Aluminum**	**Ferro-Carbide**	**Lamellor Ferro-Carbide**
2,000 through 149,999 tons	0.8/1.0	1.0/1.2	1.2/1.4	1.4/1.6
150,000 through 249,999 tons	0.6/0.7	0.8/0.9	1.0/1.1	1.2/1.3
250,000 through 2,500,000 tons	0.4/0.5	0.6/0.7	0.8/0.9	1.0/1.1

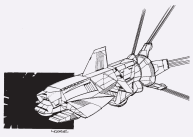
*Round down after determining total armor tonnage



As his Alliance*-class Space Station weighs in at 100,000 tons (1,000 tons of which are Structural Integrity weight) and has a Structural Integrity of 1, Joel finds that the maximum armor he can install on the unit is 333 tons (1,000 tons of Structural Integrity ÷ 3 = 333.33, round down to 333). Because its Structural Integrity value is so low, however, the station receives no free capital-scale armor for each facing (1 SI ÷ 10 = 0.1, rounded normally—down—to 0). Because he sees the* Alliance *as a fixture in an era of simpler technologies, Joel chooses standard Inner Sphere armor—which provides 0.8 capital-scale points per ton. Joel decides to install 7 capital-scale points of armor per each of the station's six facings, for a total Armor Factor of 42. This armor will weigh 52.5 tons in all (42 points ÷ 0.8 points per ton = 52.5 tons), well below the station's maximum potential armor limit. This will leave the* Alliance *with 86,652.5 unspent tons remaining (86,705 – 52.5 = 86,652.5).*



Kate's Odyssey*, a 345,000-ton JumpShip with a Structural Integrity value of 1 and an SI weight of 2,300 tons, may install a maximum of 191.5 tons of armor (2,300 tons for SI ÷ 12 = 191.67, rounded down to 191.5). Kate decides to install 168 tons of standard armor (which, because it is a Clan-designed JumpShip weighing more than 249,999 tons, provides 0.5 points of capital-scale armor per ton) for a total of 84 points (168 armor tons x 0.5 points of armor per ton = 84 points). As with the* Alliance*, the* Odyssey*'s SI of 1 provides no bonus armor, and so she assigns the armor points as follows: 15 to the Nose, 13 to the Aft and 14 to each of the four side facings. After subtracting the armor tonnage, Kate finds that her JumpShip now has 8,502 unspent tons remaining (8,670 – 168 = 8,502).*



Lynn's McKenna*-class WarShip is a 1,930,000-ton vessel with a Structural Integrity value of 95 and an SI weight of 183,350 tons. The vessel may thus install a maximum of 3,667 tons of armor (183,350 tons for SI ÷ 50 = 3,667). Lynn decides to install 1,603.5 tons of armor, and chooses to employ ferro-carbide armor. Because she planned her* McKenna *to serve in the Star League era, Lynn must choose Inner Sphere ferro-carbide, which provides 0.8 capital-scale points of armor protection per ton for a vessel this size. This yields a total of 1,282 armor points (1,603.5 tons x 0.8 = 1,282.8, rounded down to 1,282). In addition, however, the* McKenna*'s SI of 95 provides 10 extra free capital-scale points per facing (95 SI ÷ 10 = 9.5, round normally—up on .5—to 10). When assigning armor values, Lynn assigns 190 points to the* McKenna*'s Nose, 133 to its Aft and 240 to all four side armor facings. With the bonus 10 points, this yields 200 capital-scale armor points on the vessel's Nose, 143 to the Aft and 250 on each side facing. After subtracting the armor tonnage, Lynn finds that her WarShip now has 509,057.5 unspent tons remaining (510,661 – 1,603.5 = 509,057.5).*

STEP 5: ADD WEAPONS, AMMUNITION AND OTHER EQUIPMENT

The weapons, ammunition and equipment that may be mounted on advanced aerospace units are listed in the Weapons and Equipment Tables beginning on page 274 of *Tactical Operations* and page 341 of *TechManual* (see *TechManual Items*, below). In addition to any heat, damage and range statistics, these tables provide the weight these items take up on an advanced unit, how many equipment slots they occupy, what technology base (Clan or Inner Sphere) is required to use them, and any special construction rules that might apply to installing the equipment (such as location and unit type restrictions).

Remember that the total weight for a given advanced aerospace unit's structure, engine, controls, armor, heat sinks, weapons and other components must never exceed the weight established for the vehicle in Step 1. Any leftover weight that cannot be allocated to cargo space (see *Transport Bays and Doors*, p. 155) or other equipment (due to item slot constraints or other factors) is considered wasted tonnage.

Weapons and items placed on any advanced aerospace unit automatically receive a fixed firing arc in that direction (meaning a JumpShip's front-mounted weapon will have a front firing arc, while a WarShip's left-broadside mounted weapon can only fire into the left broadside arc, and so on). Advanced aerospace units may not mount turrets or pintles of any kind.

For special rules on any item, consult its entry under *Heavy Weapons and Equipment* (see pp. 201-245, *TM*), or *Advanced Weapons and Equipment* (see pp. 274-375, *TO*).

TechManual Items: The items described and listed in the Weapons and Equipment Tables in *TechManual* may all be mounted on advanced aerospace units in accordance with their standard equipment rules. Advanced aerospace units may install any item permitted on tournament-legal DropShips, in addition to any weapons and equipment featured in this book specifically permitted to such units.

Tech Base/Rating: The various Weapons and Equipment Tables note which items are available to which technology bases. Clan-made advanced aerospace units may use only items available to the Clans, while Inner Sphere-made advanced aerospace units must use only those items available to the Inner Sphere.

Space: For advanced aerospace units, only weapons have a slot space, with each weapon typically occupying 1 slot on the unit's weapon and equipment inventories. Items that require listing on this inventory are listed on the relevant Weapon and Equipment Tables with a value other than 0 for their unit types.

Weapons and Ammunition: Under these rules, all advanced aerospace units many not mount Light- or Medium-weight weapons, but they may instead mount Heavy weapons, which are represented in the Weapons and Equipment Tables starting on page 341 of *TechManual*, or page 404 of *Tactical Operations*. All ammo-dependent weapons from

these lists—except for machine guns (including their Light and Heavy versions) and nail or rivet guns—require at least a ton of ammunition. (Machine guns, nail guns and rivet guns may carry ammo in half-ton lots instead.) Advanced aerospace units must also satisfy a minimum 10-shot requirement for all ammo-dependent weapons, rounding any excess resulting ammunition weights up to the nearest half-ton.

Advanced aerospace units include their ammo bins with the weapons they feed at no cost in slots, so the 40 rounds for a WarShip's NAC/20 will appear on the same line as the weapon itself on the ship's weapon inventory.

Remember that, depending on the number of weapons and types of fire-control systems used, the advanced unit may require additional crew (and any applicable accommodations) to handle such firepower. Advanced aerospace units require gunners for all weapons and equipment that have a damage value, with crew needs for such items identified as described under *Add Control/Crew Systems* (see p. 149).

Capital Weapons: All advanced aerospace units may mount capital-scale and sub-capital scale weapons (see pp. 331, 333, 343, *TO*).

Power Amplifiers: As they only use Fusion engines, advanced aerospace units do not require power amplifiers.

Advanced Aerospace Unit Weapon Bays and Firing Arcs: As a means of simplifying their use in combat, the weapons usable by advanced aerospace units are sorted into weapon classes in the same fashion as for DropShip units. These weapon bay classes are: Point Defense, Laser, Pulse Laser, PPC, Plasma, Autocannon, LB-X AC, ATM, LRM, MRM, SRM, Rocket Launcher, Capital Missile, Capital Laser, Capital Gauss, Capital PPC, Capital AC and Screen. All weapons must be allocated to bays of the appropriate type; non-capital weapons may not be allocated to capital weapon bays, and vice versa. Note that this does not mean that all of the weapons of a given type in the same location must be condensed into one bay, though doing so would streamline the unit's game play.

The only limit to the number of weapons that can be grouped together in a single weapon bay is a maximum attack value limit—after adding up all weapon damage—of 700 standard damage points (70 capital damage points) per bay. If a combination of desired weapons exceeds this amount in a single firing arc, the vessel simply requires additional weapon bays to handle the excess weaponry, with the damage capability split as evenly as possible among all appropriate weapon bays.

Space Stations divide their weapon bays among six firing arcs: Nose, Fore-Left, Fore-Right, Aft-Left, Aft-Right and Aft. JumpShips and WarShips may divide their weapons among eight firing arcs: Nose, Fore-Left, Fore-Right, Left-Broadside, Right-Broadside, Aft-Left, Aft-Right and Aft. Side-mounted weapons must be identical on both sides of a given unit—so if a Space Station carries 2 large lasers and an SRM-6 on its Fore-Left side, it must carry 2 large lasers and an SRM-6 in its Fore-Right side as well.

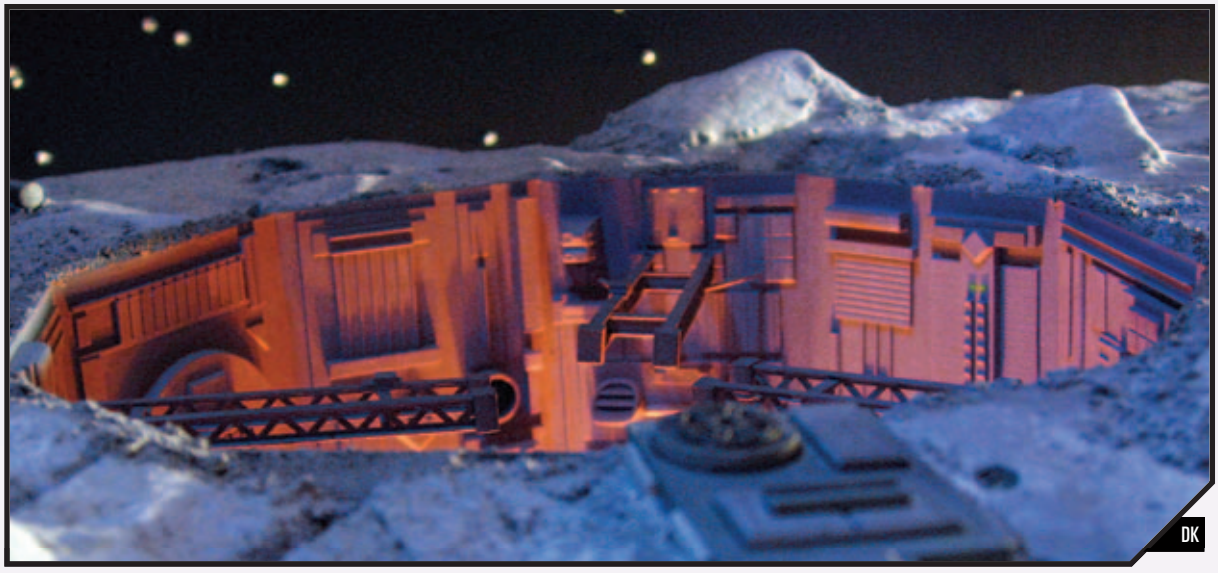
Turrets/Pintles: Advanced aerospace units may not mount turrets or pintles.

Heat Sinks: Advanced aerospace units may mount any number of heat sinks desired. However, because such units operate on a zero net heat principle (meaning that they have no heat scale to track overheating), and because weapons are fired in full weapon bays, such units must at least carry enough sinks to cover the heat produced by all weapons from a single weapon bay fired from the most heat-producing weapons bay on the unit. For example, if the combined heat from the unit's most heat-intensive weapons bay comes to 300 points, the unit must mount a minimum of 300 standard heat sinks (or 150 double heat sinks).

Docking Hardpoint (Docking Collar): As noted on page 304 of *Tactical Operations*, a docking hardpoint (also known as a docking collar) is required for one unit to dock to another. For JumpShips and WarShips docking DropShips for hyperspace jumps, the maximum tonnage per docking collar is 100,000 tons.

Small Items on Advanced Aerospace Units: Advanced aerospace units rarely employ small items, as many of the craft's amenities actually cover such features by default, but if a designer opts to install small-size items on an advanced aerospace unit, use the following rules.

Several items that may be installed on advanced aerospace units have weight values presented in kilograms rather than tons. When mounting such items, the designer must keep a run-



An unpressurized naval repair facility, built into an asteroid, awaits the next vessel in need of a repair or heavy upgrade.

ning total of the number of kilograms used. At the end of this step in the design process, divide this quantity of kilograms by 1,000 to find their total weight in tons. Always round up used weight to the nearest half-ton, so any leftover weight automatically rounds down to the nearest half-ton for cargo purposes.

Crew Quarters: Advanced aerospace units of all types receive no free crew quarters, and must therefore allocate tonnage to personnel quarters. In most cases, these quarters are installed at a standard rate of 7 tons per non-commissioned crew, gunners and second-class passengers, and 10 tons for officers and first-class passengers. Alternative quarters, however, may be installed to save on weight, reflecting a more spartan arrangement, such as applying steerage-quality quarters to all crew and passengers, or even allocating crew quarters in the form of a dedicated infantry bay, where the crew sleeps in cramped bunks with no private space whatsoever.

Bay personnel—which includes personnel associated with other units being transported, such as infantry, vehicles, fighters and 'Mechs—need not be allocated quarters, as their bays already incorporate basic amenities. Additional quarters for such personnel may be added as passenger quarters, reflecting an added level of comfort and support, but are not required.

Fire Control Systems: Advanced aerospace units have the option of exceeding their listed maximum of weapons per arc, at the designer's option, but if they do so, additional fire control systems and power distribution systems will need to be installed. To determine the weight of these systems, divide the number of weapons mounted in any firing arc that exceeds its weapon limits (12 for JumpShips, 20 for Space Stations and WarShips) by the limit value, and round the result down to the nearest whole number. Multiply this result by 0.1 times the total weight of *all* weapons mounted in that arc (discounting ammunition), and round the final result up to the nearest half. This is the final weight of any expanded fire control and power systems the unit requires for such weaponry.

Transport Bays and Doors: Bays for cargo and unit transport often make up all remaining tonnage on advanced units of every stripe (though the Star League era also left ample room for later refit work, such as converting a WarShip from a cruiser configuration to a carrier model). These bays can be specific cubicles for 'Mechs, fighters and other units, or they may be generic cargo bays to store supplies, spare parts or even additional ammunition and fuel stores.

How much of the generic cargo space is allocated to such needs is entirely up to the designer and can vary from mission to mission, so this issue need not be addressed during construction. During the time of the Star League, for example, it was standing doctrine to devote as much as 25 percent of a WarShip's total mass to cargo, with a minimum of 1 percent of the ship's mass (and as much as 5 percent) devoted to spare parts for routine maintenance, and to allocate tonnage for 180 to 360 days' worth of food and potable water for crew and passenger needs, including bay personnel (in which case, 1 ton of food and water covered the needs of 200 people for 1 day). Additional bulk tonnage was used to carry extra ammunition for the vessel's guns (which could vary wildly), or to house troops and their supplies in transit, freeing them from the more cramped confines of their DropShips. The remainder was then left to haul supplies and personnel for more humanitarian missions, like colonial support and planetary evacuations. JumpShips and more modern WarShips often lack this much space, resulting in units that are better tailored to short-term functions and briefer missions away from ports of call or in the absence of supporting DropShips.

On spacecraft, 1 ton of food and water covers the needs of 200 people for 1 day if they are assigned to quarters. Bay personnel (including infantry bay personnel) who do not receive separate quarters have simpler life support and facilities, and thus use 1 ton of consumables (food, water, air, and so on) per 20 people for 1 day. Personnel transported in cargo bays use 1 ton of consumables per 10 people per day.

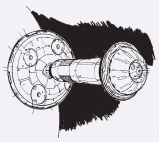
Designers of advanced aerospace units must assign a minimum of 1 bay door to any unit with a transport bay, to allow for entry and egress from the unit. To find the maximum total number of bay doors a unit can incorporate, consult the Advanced Unit Maximum Bay Doors Table above.

A transporting unit's launch rate (per turn) for onboard fighters or other launch-capable units with appropriate cubicles (Small Craft, 'Mechs and ProtoMechs) is equal to twice the number of functioning bay doors associated with its launch-capable units. For example, a Space Station with 18 fighters in a single fighter transport bay that has 2 doors assigned to it may launch 4 of these 18 fighters per turn (2 doors x 2 fighters per door per turn = 4 fighters per turn). Meanwhile, a WarShip that has 12 BattleMechs across two bays, each of which has 2 doors, would be able to deploy 8 'Mechs per turn (2 doors per bay x 2 bays x 2 BattleMechs per door per turn = 8 BattleMechs per turn).

ADVANCED AEROSPACE UNIT MAXIMUM BAY DOORS TABLE

Advanced Unit Type	Maximum Bay Doors
JumpShips	7 + [Unit Weight ÷ 50,000]*
Space Stations	8 + [Unit Weight ÷ 75,000]*
WarShips	8 + [Unit Weight ÷ 100,000]*

*Round fractions up



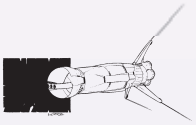
With 86,652.5 tons left to spend on his Alliance*-class Space Station, Joel starts by installing two pressurized repair bays (see p. 335,* TO*), each of which he wants to be capable of servicing craft weighing up to 50,000 tons. The weight for such bays is thus 3,750 tons each (50,000 tons x 0.075 = 3,750), for a total of 7,500 tons. Joel then adds 8 Small Craft bays (200 tons each), with 1 Door, and a 420-meter grav deck for the comfort of shipboard personnel (500 tons). Because these are not weapon items and the* Alliance *is an advanced aerospace unit rather than a support vehicle, none of this equipment requires a location or arc except for the Small Craft bay door, (which Joel assigns to the Front facing).*

Moving on, Joel then decides to mount a range of weapons on his Space Station. Intended for defensive purposes only, he eschews capital-scale weapons and so limits his options to the standard scale. Because the Alliance *lacks maneuvering capability, he decides to mount identical firepower in each of its six firing arcs (Front, Fore-Left, Fore-Right, Aft-Left, Aft-Right and Aft), and chooses the following weapons per arc: 1 PPC (7 tons), 2 LRM-15s (7 tons each), AC/5 (8 tons), 2 Large Lasers (5 tons each) and 6 Medium Lasers (1 ton each). Because this firepower is repeated in each of the unit's six arcs, the total weight for the station's weaponry comes to 270 tons (6 arcs x [1 (PPC) + 14 (2 LRM-15s) + 8 (AC/5) + 10 (2 Large Lasers) + 6 (6 Medium Lasers)] = 270). Because the number of weapons per arc does not exceed 12, no additional fire control is required for the station. The weapons, grouped into PPC, LRM, AC and Laser bays, also do not exceed 70 points of capital-scale damage and so do not need to be further divided within their arcs. Joel further installs 30 tons of ammunition to feed the LRM-15s, and 6 tons to feed the AC/5s. This ammunition is distributed evenly among the six weapon arcs, placing 5 tons of LRM ammo and 1 ton of AC/5 ammo on in each arc. Between the weapons and the additional equipment installed above, Joel has spent 11,906 tons (7,500 [2 pressurized bays] + 2,000 [2 docking collars] + 1,600 [8 Small Craft bays] + 500 [grav deck] + 270 [weapons] + 36 [ammo] = 11,906).*

Looking at crew requirements, Joel sees that the Alliance *now requires a minimum base crew of 65 (45 + [100,000 tons ÷ 5,000] = 65), plus 12 gunners (72 weapons ÷ 6 = 12), for a total minimum crew of 77. This means the station also has a minimum requirement of 13 officers (77 crew ÷ 6 = 12.8, round up to 13), who may be included among the crew counts. Joel decides to triple the amount of regular and officer crew to a final total of 210 crewmen and 20 gunners, 38 of whom will be officers (230 ÷ 6 = 38.3, round up to 39), to account for additional personnel for the repair bays and more frequent crew rotations on longer assignments. He also opts to add two platoons of marines (48 troopers) to the station's personnel, as well as space for up to 150 passengers. For this final count of 172 crew, 20 gunners, 38 officers, 48 marines and 150 passengers, he knows he has already installed 54 Crew quarters and 11 Officers' quarters, leaving 186 more quarters for the crew, gunners and marines (at 7 tons each), and 27 more Officers' quarters to (10 tons apiece) to install, plus 100 second-class quarters for passengers (7 tons apiece), and 50 first-class quarters for VIP passengers (10 tons each). The final tally for the* Alliance*'s additional quarters thus comes to 3,132 tons (826 [118 crew] + 140 [20 gunners] + 336 [48 marines] + 270 [27 officers] + 700 [100 second-class passengers] + 500 [50 first-class passengers] = 2,772). For emergency evacuation, Joel adds 60 Life Boats at 7 tons each, for an extra 420 tons.*

After subtracting the equipment, weapons, quarters and lifeboats, Joel finds that his Alliance *now has 73,554.5 tons remaining (86,652.5 tons – 11,906 [weapons and equipment] – 2,772 [quarters] – 420 tons [lifeboats] = 73,554.5 tons), which he assigns to a single cargo bay. For accessibility, he assigns two doors to this bay—one each facing the station's Fore-Left and Fore-Right sides.*

Kate's Odyssey*-class JumpShip has 8,502 unspent tons remaining for equipment, weapons and quarters. As her vessel is a JumpShip weighing 345,000 tons, she determines that the first priority will be docking collars, of which the Odyssey can have up to 6 (345,000 tons ÷ 50,000 = 6.9, round down to 6). She decides to install 4 Docking Collars (at 1,000 tons each), as well as 1 Small Craft bay (200 tons), 2 110-meter grav decks (100 tons each), and 3 Life Boats (7 tons each). For added support against boarding parties, she even adds two Battle Armor Point/Squad bays (10 tons each). As an advanced aerospace unit, none of these items require slot space, but the Small Craft and Battle Armor bays do require doors, which Kate assigns at 1 for the Small Craft (Front facing), and 2 for the Battle Armor (Aft-Left and Aft-Right, respectively). After installing this equipment, Kate decides—for an extra-special bonus—to install a Lithium-Fusion Battery on her JumpShip as well, at a cost of 3,450 tons (345,000 JumpShip tons x 0.01 = 3,450 tons). These non-weapon items come to a total of 7,891 tons (4,000 [4 Docking Collars] + 200 [1 Small Craft Bay] + 200 [2 Grav Decks] + 21 [3 Life Boats] + 20 [2 Battle Armor Bays] + 3,450 [LF Battery] = 7,891).*



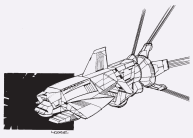
Even though, like Joel's Alliance*, her Clan-made* Odyssey *will be a largely stationary target in combat, Kate decides that its weapons need not be so uniformly distributed. With leftover tonnage too low to expend on capital-scale weapons, she also goes for standard-scale weaponry. For the Front arc, she installs 2 Gauss Rifles (12 tons each) and 3 tons of Gauss ammo (for 24 shots) to an Autocannon bay, and 1 ER Large Laser (4 tons) to a Laser bay. She also adds 1 Large Pulse Laser (6 tons) and 2 Medium Pulse Lasers (2 tons each) to a Pulse Laser bay. For the Front-Side arcs (which must be identical to each other), she assigns 1 ER Large Laser to a Laser bay, 2 Medium Pulse Lasers to a Pulse Laser bay and 2 Anti-Missile Systems (0.5 tons each) with 2 tons of ammo (24 shots) to a dedicated AMS bay. For the Aft-Side arcs (which also must mirror each other), Kate mounts 1 Large Pulse Laser and 2 Medium Pulse Lasers in a Pulse Laser bay, and 2 more Anti-Missile Systems (with 2 tons of ammo; 24 shots) to a dedicated AMS bay. The Aft arc is covered by an ER Large Laser in a Laser bay, plus 1 Large Pulse and 2 Medium Pulse Lasers in a Pulse Laser bay. As no single arc exceeds 12 weapons, extended fire control is unnecessary, and no capital damage values in any single weapons bay exceed 70, requiring no further weapon bay breakdowns. This leaves the total weight of all mounted weapons at 92 tons (38 [Front Arc: 2 Gauss, 1 ER Large, 1 Large Pulse, 2 Medium Pulse] + 18 [2 x Front-Side Arc: 1 ER Large, 2 Medium Pulse, 2 AMS] + 22 [2 x Aft-Side Arc: 1 Large Pulse, 2 Medium Pulse, 2 AMS] + 14 [Aft Arc: 1 ER Large, 1 Large Pulse, 2 Medium Pulse] = 92 tons), plus 11 tons of ammunition (3 [Gauss] + 8 [AMS; 4 Arcs x 2 tons each] = 11).*

Reviewing crew needs, Kate finds that the Odyssey *has a base requirement of 24 crewmen (6 + [345,000 ÷ 20,000] = 23.25, rounded up to 24) plus 5 gunners (26 weapons [AMS not counted, as it does not require a Gunnery Skill roll to fire] ÷ 6 = 4.33, round up to 5). Five of these crewmen must be officers (29 crew [24 base + 5 gunners] ÷ 6 = 4.833, round up to 5). Kate assigns 7 additional crewmen to exceed the minimum needs, upping the crew and gunner total to 36; this forces her to add another officer for a total of 6 (36 crew + gunners ÷ 6 = 6). As she has already assigned 20 Crew quarters and 4 Officers' quarters, she assigns an additional 10 standard 7-ton quarters to the*

remaining non-rated crew and gunners, and 2 additional 10-ton Officers' quarters, covering the needs of the 30 enlisted and 6 officers of her vessel for a total weight of 90 tons (70 [10 crew and gunners x 7] + 2 [2 officers x 10] = 90). Though the vessel will also have bay personnel for its Small Craft and battle armor, Kate decides that space is already at a premium for her Odyssey *and decides not to spring for extra quarters for these passengers, forcing them to make do with the minimalist bunk space their bays provide.*

The final 418 tons (8,502 – 7,891 [non-weapon equipment] – 92 [weapons] – 11 [ammo] – 90 [quarters] = 418) is assigned to a standard cargo bay, which Kate provides with a single bay door (facing the front).

Lynn's McKenna*-class WarShip has 509,057.5 tons left to spend on weapons, equipment and quarters. Though she mainly intends this vessel to engage and destroy other capital ships, she decides to start with the non-weapon equipment first, just to get them out of the way. First, she chooses to install docking collars, and computes that the 1,930,000-ton battleship can have up to 38 (1,930,000 tons ÷ 50,000 = 38.6, round down to 38). Lynn decides 38 would be excessive, however, and installs only 6 collars on the* McKenna *(at 1,000 tons each). She also installs launch cubicles for 50 fighters (at 150 tons each), divided into two bays (each of which is assigned 4 doors). An additional 16 Small Craft bays are added as well (at 200 tons apiece), but not assigned doors (they will simply launch through the fighter bays when needed). For crew comfort and security, Lynn also installs 3 grav decks—2 at 45-meter diameter and 1 at 75-meter diameter—at 50 tons each, plus 30 7-ton Escape Pods and 30 7-ton Life Boats. For added strategic value, Lynn also decides to add a Lithium-Fusion Battery to this WarShip, at a weight cost of 19,300 tons (1,930,000 WarShip tons x 0.01 = 19,300 tons). These non-weapon items come to a total of 36,570 tons (6,000 [6 collars] + 7,500 [50 Fighter Cubicles] + 3,200 [16 Small Craft Bays] + 150 [3 Grav Decks] + 210 [30 Life Boats] + 210 [30 Escape Pods] + 19,300 [LF Battery] = 36,570).*



For weaponry, Lynn intends to focus entirely on capital-scale armament, relying on the McKenna*'s fighters and other escorts to deal with lesser threats, and underscore the vessel's role as a battleship. As a WarShip, the* McKenna *will have 8 firing arcs available in all: Nose, Fore-Left, Fore-Right, Left Broadside, Right Broadside, Aft-Left, Aft-Right and Aft.*

In the Nose arc, Lynn decides to mount 2 NAC/40s in Capital AC weapon bays and 2 NL55s in Capital Laser weapon bays. The NACs must be broken into two Capital AC bays, however, because their combined capital-scale damage values—40 per weapon—would exceed 70 points. These weapons have a combined weight of 11,200 tons (9,000 [2 NAC/40s] + 2,200 [2 NL55s] = 11,200) before ammo is added.

In the Fore-Side arcs (which, as with all aerospace units, must mirror each other), the McKenna *mounts 3 more NAC/40s (split into three Capital AC weapon bays), backed up by 3 NL55s in a Capital Laser weapon bay, and 2 AR-10 launchers in a Capital Missile weapon bay. These weapons will have a combined weight of 17,300 tons (13,500 [3 NAC/40s] + 3,300 [3 NL55s] + 500 [2 AR-10s] = 17,300) per side, for a grand total of 34,600 tons for both Fore-Side arcs before ammo is added.*

In the Broadside arcs (which, once more, must mirror each other), Lynn installs 12 Heavy NPPCs. Because each NPPC delivers a capital-scale Damage Value of 15, a maximum of 4 may be mounted in a single Capital PPC bay before it exceeds the maximum rating for a single weapon bay. Thus, the broadside weapons are broken into 3 Capital PPC weapon bays of 4 Heavy NPPCs each. At 3,000 tons per Heavy NPPC, each Broadside arc has a weapon weight of 36,000 tons, for a grand total of 72,000 tons for both Broadside arcs.

For the Aft-Side arcs, Lynn repeats the same weapon load she used in the Broadside arcs, with the same effects and final weights. Thus, the 12 Heavy NPPCs in each Aft-Side arc will weigh 36,000 tons, for a grand total of 72,000 tons for both Aft-Side arcs.

In the Aft arc, Lynn begins with 4 NAC/40s spread across 4 Capital AC weapon bays, and backs them up with 4 NL55s in a Capital Laser weapon bay, plus 2 AR-10 launchers. Before ammo is added, these weapons have a combined weight of 22,900 tons (18,000 [4 NAC/40s] + 4,400 [4 NL55s] + 500 [2 AR-10s] = 22,900).

Because none of the McKenna*'s firing arcs exceeded 20 weapons, there is no need for expanded fire control systems. To feed the ammunition needs of the vessel's 12 NAC/40s, Lynn decides to install 500 shots' worth of NAC/40 ammo (at 1.2 tons per shot, that comes to 600 tons; 500 x 1.2 = 600), which she divides as evenly as possible among the various NAC/40s (41 shots in the Nose NAC/40s and 1 of the 3 NACs in each Fore-Side arc; 42 shots to all others). For the AR-10s, she provides 30 Barracuda Missiles (at 30 tons each), 20 White Sharks (at 40 tons each) and 20 Killer Whales (at 50 tons each)—placing 5 Barracudas in all 6 launchers, 7 each of the Sharks and Whales in the Fore-Side launchers, and 6 each of these same missiles in the Aft launchers). The total weight for all this ammo comes to 3,300 tons (600 [500 NAC/40 shots] + 900 [30 Barracuda Missiles] + 800 [20 White Shark Missiles] + 1,000 [20 Killer Whale Missiles] = 3,300).*

Reviewing crew needs, Lynn finds that the McKenna *has a base requirement of 431 crewmen (45 + [1,930,000 ÷ 5,000] = 431) and 78 gunners (78 capital weapons ÷ 1 = 78), for a total crew of 509 (431 + 78 = 509). 85 of these crewmen and gunners must be officers (509 crew ÷ 6 = 84.8, round up to 85). Lynn determines to add another 70 crewmen to the mix, which raises the total crew count to 579, 97 of whom must now be officers (579 crew ÷ 6 = 96.5, round up to 97). With a final crew count of 97 officers, 404 crewmen, and 78 gunners, Lynn notes before assigning quarters that she has already installed 359 crew quarters and 72 officer quarters. She decides to assign an additional 123 standard 7-ton quarters to the remaining non-rated crew and gunners, and 25 additional 10-ton Officers' quarters, for a grand total of 97 Officers' quarters (72 previously installed + 25 added), and 482 Crew quarters (covering the needs of the 404 enlisted crew and 78 gunners of this vessel). The added*

ADVANCED AEROSPACE UNIT COSTS TABLES

ADVANCED AEROSPACE UNIT FINAL COSTS TABLE

Unit Type	Total Cost Formula
JumpShips	(Structural Costs + Weapons and Equipment Costs) x 1.25
WarShips	(Structural Costs + Weapons and Equipment Costs) x 2
Space Stations	(Structural Costs + Weapons and Equipment Costs) x 5

ADVANCED AEROSPACE UNIT STRUCTURAL COSTS AND AVAILABILITY

Component	Cost (in C-bills)	Tech Rating	Availability	Introduction
Controls				
Bridge	200,000 + (10 x Unit Tonnage)	C	C-C-C	ES
Computer	200,000	B	C-C-C	ES
Life Support	5,000 x (Total Passengers + Crew)	C	C-C-C	ES
Sensors	80,000	C	C-C-C	ES
Fire Control Computer	100,000	C	C-C-C	ES
Gunnery Control Systems	10,000 x (Number of Arcs with Weapons)	C	C-C-C	ES
Structure	100,000 x Structural Integrity	C	D-D-D	ES
Maneuvering/Station-Keeping Drive				
Drive Unit	500 x Safe Thrust x (Unit Tonnage ÷ 100)	D	C-D-C	ES
Engine	1,000 x Engine Tonnage	D	C-E-C	ES
Engine Control Unit	1,000	D	C-C-C	ES
Kearny-Fuchida (K-F) Drive				
Drive Coil	60,000,000 + (75,000,000 x No. of Docking Collars)	D	D-E-D	2107
Initiator	25,000,000 + (5,000,000 x No. of Docking Collars)	D	D-E-D	2107
Controller	50,000,000	D	D-E-D	2107
Tankage	50,000 x K-F Drive Integrity Value	D	D-E-D	2107
Sail	50,000 x Sail Tonnage	D	E-E-D	2220
Charging System	500,000 + (200,000 x No. of Docking Collars)	D	D-E-D	2107
Standard Core	Add all Drive Components for total cost of K-F	D	D-E-D	2107
Compact Core	Multiply all K-F Drive Components by 5	D	D-F-E	2300
Standard Core w/Lithium-Fusion Battery	Multiply all K-F Drive Components by 3	D	E-F-E	2529
Compact Core w/ Lithium-Fusion Battery	Multiply all K-F Drive Components by 15	D	E-E-E	2529
K-F Drive Support Systems				
JumpShip Support Systems	10,000,000 x (Unit Tonnage ÷ 10,000)	D	D-D-D	2107
WarShip Support Systems	20,000,000 x (50 + Unit Tonnage ÷ 10,000)	D	D-X-D	2300
Additional Ship's Systems				
Attitude Thrusters	25,000	C	C-C-C	ES
Docking Collar	100,000	B	C-C-C	2304
Fuel Tank	200 x Fuel Tonnage	B	A-A-A	PS
Armor				
Standard	10,000 x Armor Tonnage	D	B-B-B	2300
Improved Ferro-Aluminum	50,000 x Armor Tonnage	E	E-X-E	2350
Ferro-Carbide	75,000 x Armor Tonnage	E	E-F-E	2370
Lamellor Ferro-Carbide	100,000 x Armor Tonnage	E	E-F-E	2615
Heat Sinks				
Standard	2,000 x (Total Number of Heat Sinks)	D	B-B-B	ES
Double	6,000 x (Total Number of Heat Sinks)	E	C-E-D	2567

Notes: ES = Early Spaceflight (introduced between 1950 and 2200); PS = Pre-Spaceflight (introduced in or before 1950)

ADVANCED AEROSPACE UNIT COSTS TABLES

ADVANCED AEROSPACE WEAPON AND EQUIPMENT COSTS AND AVAILABILITY

Component	Cost (in C-bills)	Tech Rating	Availability	Introduction
Crew Quarters	p. 293, *TM*	A	*	PS
Energy Storage Batteries	1,000,000	D	C-E-D	2131
Escape Pods	5,000	D	C-D-C	ES
Grav Deck (Under 100m diameter)	5,000,000	B	C-C-C	ES
Grav Deck (100-250m diameter)	10,000,000	B	C-C-C	ES
Grav Deck (Over 250m diameter)	40,000,000	B	C-C-C	ES
Lifeboat	5,000	C	C-C-C	ES
Naval Repair Facilities (Pressurized)	10,000 x Tonnage Capacity	C	C-E-D	ES
Naval Repair Facilities (Unpressurized)	5,000 x Tonnage Capacity	C	C-E-D	ES
Naval Tug Adaptor	100,000	C	C-C-C	ES
Transport Bays	p. 293, *TM*	*	*	*
Additional Weapons/Equipment				
TechManual items	p. 290-296, *TM*	*	*	*
Tactical Operations items	p. 404-411, *TO*	*	*	*

*See Costs column for page reference.
Notes: ES = Early Spaceflight (introduced between 1950 and 2200); PS = Pre-Spaceflight (introduced in or before 1950)

quarters come to a total weight of 1,111 tons (250 tons [25 Officers' quarters x 10 tons per] + 861 [123 Crew quarters x 7 tons per] = 1,111). Though the vessel will also have bay personnel for its Small Craft and fighter pilots, Lynn decides that the bunk space provided in the fighter and Small Craft bays will be sufficient for such personnel. She also does not bother to add any passenger cabins; the McKenna *is a battleship, not a cruise liner.*

The final 255,376.5 tons (509,057.5 – 36,570 [non-weapon equipment] – 212,700 [weapons] – 3,300 [ammo] – 1,031 [quarters] = 255,376.5) is assigned to a standard cargo bay, which Lynn provides with 2 bay doors (facing the Left and Right Broadsides).

STEP 6: COMPLETE THE RECORD SHEET

By the time the designer has chosen all structure, engine and controls for the advanced unit, and added armor, weapons and equipment, all items must be allocated to their proper places on the appropriate Blank Record Sheet. For a competed Record Sheet, the designer must make sure to have selected the appropriate sheet for the unit's type. The sheet must have all data filled in for the Station/JumpShip/WarShip Data block (including name, tonnage and Thrust values). All equipment slots must be allocated on the Weapons and Equipment Inventory (including ammunition and number of shots per bin). All extraneous armor and internal structure points must be blacked out on the Armor Diagram.

In the case of advanced aerospace units, weapons are allocated in groups based on weapon classes, with both standard-scale and capital-scale weapons divided into classes. For each weapon group, advanced aerospace units must indicate the standard-scale damage inflicted by the combined weapons in that group at each range, as well as the capital-scale damage (in parentheses). Because the weapons on these units ordinarily fire as a group (unless using the *Individual Weapons* rules; see p. 114), when listing the heat and damage values of a weapons group, these values should be presented as the value for *all* weapons in that group. For example, a listing on the record sheet for 2 ER Large Lasers in a single JumpShip weapon bay would state "2 ER Large Lasers" under the Quantity and Weapon columns, and show 24 for Heat and 16 (2) for standard-scale (capital-scale) damage at the Short and Medium ranges, reflecting both weapons fired in unison.

Once all of the above is completed, the advanced unit is ready for game play.

CALCULATING ADVANCED AEROSPACE UNIT COSTS

The following rules are additions and/or adjustments to those presented in the *TechManual* (see pp. 302-313). They allow players to determine the C-bill costs and availabilities for any advanced aerospace unit that may be created under these rules. Note that the Costs for weapons and other equipment may be found in *TechManual* (see pp. 290-296) and *Tactical Operations* (see pp. 404-411).

BASIC COST CALCULATIONS

As in *TechManual*, computing an advanced unit's C-bill cost is a simple matter of summing up the costs for all of the unit's structural components (such as engines, control systems, K-F drives, structure and armor), plus the cost of all weapons and equipment added. Final cost multipliers are then applied to the result, based on the unit's type and weight.

Component Formulas

On occasion throughout the cost calculations process, the designer may be asked to find an individual component's cost through a sub-formula, such as determining the cost of a JumpShip's K-F drive components, by adding to a flat base value a second value based on the number of docking collars mounted on the vessel. When encountering such component formulas, care should be taken to ensure that the values used are the exact ones required for the formula. Computing a WarShip's transit drive engine cost using the ship's total weight instead of its engine weight, for example, can produce a wildly different result.

Rounding

All costs computed here must not be rounded until the end of the calculations process, after applying any final cost multipliers. At that point, costs should be rounded normally to the nearest C-bill (rounding up at .50).

In the earlier stages of calculations, however, designers may either leave all values unrounded, or—for more manageable numbers—rounded normally to three significant digits after the decimal point (thus, a value of 1.4563 could be rounded to 1.456 with minimal impact on computations).

STRUCTURAL COSTS

Because the advanced aerospace units presented in these rules are broadly cross-compatible with each other (in terms of component costs), the Structural Costs Table presented in this section covers all advanced aerospace units together. To find a given unit's structural costs, simply sum up the combined values for all appropriate equipment listed under Advanced Aerospace Unit Structural Costs and Availability.

WEAPONS AND EQUIPMENT

The Weapon and Equipment Costs and Availability Table is used to find the additional cost—beyond that of the aforementioned structural components—for any armaments and other items mounted or carried by a given advanced aerospace unit. For brevity, however, the costs for most of the weapons and items already covered by *TechManual* and *Tactical Operations* simply refer to the appropriate pages in those sources. As a general guide, when using these figures to compute a unit's final cost, it is not necessary to purchase ammunition for ammo-based weaponry. (Combat units, after all, are generally assembled with weapons and fuel tanks empty to avoid mishaps, and ammo purchases are best left up to field commanders.)

The cost of all weapons and equipment are added to the structural costs for the unit.

Special Exemption: Crew/Passenger Quarters and Infantry Bays/Compartments

For all advanced aerospace units, any and all crew/passenger quarters, infantry bays and infantry compartments are considered cost-free, regardless of the quarters or infantry bay type used on the unit (this cost is considered to be incorporated into the structural and life support costs already incurred by the vessel itself).

FINAL UNIT COSTS

Once an advanced aerospace unit's structural and equipment costs have been determined, the unit's final total cost may be computed by applying the appropriate Total Cost formula for the unit as found under the Advanced Aerospace Unit Final Costs Table. These final costs account for extra features that affect the design overall, as well as the labor, support, resource processing and other abstract minutiae that can go into a unit's design.

Once applied, the unit's final cost may be rounded as indicated under *Basic Cost Calculations* (at left).

CALCULATING ADVANCED AEROSPACE UNIT BV

The following rules add to those presented in the *TechManual* (see pp. 302-313). They allow players to calculate the Battle Value for any advanced aerospace unit that may be created under these rules. Note that the Battle Values for weapons and other equipment may be found in *TechManual* (see pp. 317-319) and *Tactical Operations* (see pp. 382-385).

Equipment Battle Values: Note that any equipment introduced in *TechManual* or *Tactical Operations*, that is not included in the Inner Sphere and Clan Equipment and BV Tables of those books is considered to have a BV of 0 for the purposes of calculating a unit's Battle Value.

CALCULATING ADVANCED AEROSPACE OFFENSIVE BATTLE RATING

Advanced Aerospace units use a different method then aerospace fighters, for determining the battle value of their weapon attacks, use the following rules in place of those on pages 312-313 of *TechManual*.

Calculate Base Weapon Rating

As with aerospace fighters the weapon battle rating is adjusted

to take in account the units heat efficiency, but the exact method varies to better reflect advanced aerospace zero overheat limitations and their usage of firing arcs.

Advanced Aerospace Heat Efficiency= Heat Sink Capacity

Heat Sink Capacity: For Advanced aerospace units, this is the same as for DropShips (see p. 312, *TM*). After finding the Advanced Aerospace Unit Heat Efficiency, notate this and proceed to Calculate BV By Arc.

Calculate BV By Arc: Advanced aerospace units calculate their weapon battle rating by their firing arcs, reflecting their firing by weapon bay and generating heat by firing arcs. First determine the total weapon only BV (do not factor ammo BV in these calculations) of each individual firing arc (Nose, Aft, Fore Left/Right, Aft Left/ Right, Broadside [for WarShips] Left/ Right).

Once these values are determined, compare the battle value of the Nose, Broadside and Aft arcs (for WarShips) or all arcs (for JumpShips, Space Stations and Satellites). The arc with the greatest weapon BV becomes the "front" of the unit for calculating heat efficiency. The "front" arc is calculated at 100% of its Battle Value, even if this arc exceeds the Heat Sink Efficiency of the unit. Next, if the heat sink capacity of the unit has not been exceeded, then find the adjacent firing arc with the highest BV (if two are the same value pick one at random) and calculate this at 100% BV. If heat sink capacity would be exceeded by firing this arc, then add only 50% of the BV for this arc.

If the heat sink capacity will not be exceeded, then add the arc on the opposite side from the "nose" arc at 50% of its total BV; if heat is exceeded then add only 25% of its total BV. Finally all remaining firing arcs are then added at 25% of their BV.

Multiply Total Offensive Battle Rating by Speed Factor: Calculate the units speed factor as per the rules for aerospace (see p. 312, *TM*), using maximum thrust. See specific rules below for how to determine the maximum thrust of a Space Station or JumpShip.

SPACE STATIONS

Except as noted above, use the rules for calculating an Aerospace BV (see pp. 312-313, *TM*) to find the BV of a space station. Stations have a Vehicle Type Modifier of 0.7 when computing Defensive Battle Rating, but multiply their capital-scale armor factor by 25, rather than 2.5, and their capital-scale structural Integrity by 20, rather than 2.0.

When calculating their Offensive Battle Rating, space stations find their Speed Factor based on a Maximum Thrust of 0.

JUMPSHIPS

Except as noted above, use the rules for calculating an Aerospace BV (see pp. 312-313, *TM*) to find the BV of a JumpShip. JumpShips have a Vehicle Type Modifier of 0.75 when computing Defensive Battle Rating, but multiply their capital-scale armor factor by 25, rather than 2.5, and their capital-scale structural Integrity by 20, rather than 2.0.

When calculating their Offensive Battle Rating, JumpShips find their Speed Factor based on a Maximum Thrust of 1.

UNIT TYPE MODIFIERS TABLE (ADDENDUM)

Type	Modifier
JumpShip	0.75
WarShip	0.8
Space Station	0.7

WARSHIPS

Except as noted above, use the rules for calculating an Aerospace Unit's BV (see pp. 312-313, *TM*) to find the BV of a WarShip. WarShips have a Vehicle Type Modifier of 0.8 when computing Defensive Battle Rating, but multiply their capital-scale armor factor by 25, rather than 2.5, and their capital-scale structural Integrity by 20, rather than 2.0.

BALANCING AEROSPACE UNIT FORCES

The Battle Value system was originally designed for the tactical board game and while relatively balanced for ground based units, and even the integration of Aerospace fighter support, it is not able to fully capture the nuances of inter unit aerospace combat. Aerospace Battle Value is structured to balance out similar units and is not ideal for comparing different classes (fighter, fighter squadrons, Large Craft and so on) against one another.

Similar to BattleForce force balancing (see p. 238), for best game balance it is recommend that both sides have similar BV for each aerospace unit class, or at least similar numbers (12 fighters and 1 DropShip per side for example).

Mike is fielding a Wing of 18 fighters (in 3 six-fighter squadrons) with a total BV 25,218 and one Vengeance *DropShip (BV 4,487), for a total force BV of 29,705. Dave wants to field 2 Obsolete* Avengers *(BV 4,320 each) and 3 Obsolete* Achilles *(BV 6,744 each) for a total of 28,872 BV. While appearing to be fairly close in BV, experience has told Mike and Dave, that these forces are not well balanced, as Dave lacks any fighters. Even with the use of the Emergency Combat Heading Operation rule (see p. 113), Dave is likely to have his* Avengers *overwhelmed quickly and his* Achilles *will have to work over time to keep the fighters in their fore arcs. Dave decides instead to take only 1* Achilles *and fields fighters for the remainder of his force.*



McFadden's Skyriders fighters protect their Leopard CV *DropShip*

HOUSE RULES

STEVEN MOHAN, JR.



BLACK DAWN OFFICES, CENTURY BUILDING, GAMECOCK
CHARLESTON, TAURIAN CONCORDAT
8 OCTOBER 3062

The smooth briefing officer from the Federated Suns folded his arms and leaned against the wall. "So we're talking two to one numerical superiority. Ought to be a milk run." A small, confident smile formed on his handsome face.

The man could've been in sales. He was tall and good-looking: mahogany skin set off by a white linen suit and a bright green shirt, eyes like slivers of emerald. The Fed looked like the kind of man who could do anything.

Or say anything.

Major Attila Kovago leaned back in his chair and studied the topo map projected on the wall. *What am I missing?* "If it's a milk run, why not send the Malagrotta Militia?"

The Fed officer's smile tightened a notch. "Because the Malagrotta Militia is busy."

Kovago understood *that*, at least. The Steiner-Davion brood was running through the next round of power games, and that meant troops would get strange deployment orders, units moved to guard against the enemy *within*.

And if Black Dawn picked up a couple of extra C-bills as a result, what was wrong with that?

Kovago's XO, Captain Timea Stieber, leaned across the table. She was a tough woman, red hair cut short, powerful biceps showing through her scrub khakis, alert blue eyes. "This is dangerous for us. It can't be known that we took a Fed contract. The Davions aren't exactly well-loved in this part of the Periphery."

The briefing officer, Leftenant Colonel Nigel Thompson, spread his arms wide. "This has nothing to do with the Concordat," he said soothingly. "We want you to take out a pirate band. That's good for everybody."

Timea snorted. "Yeah, well, Taurus may not see it that way."

"There are any number of ways we can wash the money," Thompson said without missing a beat.

Kovago glanced at the fourth person in the room, Lieutenant Darrin Carter. He was a young kid, mid-twenties, with unruly ash blond hair. Lean and hungry and smart enough to stay quiet and attentive when he didn't understand something. All traits that made him a brilliant scout. Kovago had asked Carter to sit in on this meeting because he'd come to the Black Dawn from the Malagrotta Crucis March Militia and he might have some insight that Kovago could use.

Kovago met Carter's eyes. The young man shrugged. Not exactly a ringing endorsement.

Kovago leaned forward. "I'm guess I'm still not sure why you need us."

Thompson sighed. "We're talking pirates here. They've hit Montour, Cohagen, Estuan, Armington." He shook his head. "Not hard to guess where they're based. Our militia are tied to their worlds. We need someone who can freelance." He raised an

eyebrow. "We need someone who can operate off the map."

"What does that mean, exactly?" Kovago asked, meeting Thompson's eyes.

Thompson said nothing, but he didn't look away either.

Kovago frowned.

Perhaps sensing the moment slipping away from him, Thompson said, "Do well and there might be more business."

Kovago looked at the screen again. Black Dawn had two full companies of BattleMechs and they were going up against a pirate band that supposedly had no more than ten or twelve. Assuming the Fed's intel was right, it really *would* be a milk run.

And they'd earn a nice fee.

But dammit, something just didn't feel right.

Kovago found himself shaking his head. "I'm sorry, Colonel, but I'm afraid—"

Thompson cut him off. "Please wait one second, Major," he said, holding up his hands palm out. "We've discussed your fee, but we haven't talked about your signing bonus."

He touched a button on his remote and the slide was replaced by a vid of a BattleMech running across a meadow. It looked like a heavy or assault machine, except it was moving way too fast to be a big boy; eighty kph at least. Its right arm ended in a RAC 5 supplemented by a machine gun. Its left arm was an LRM launcher and Kovago counted two laser apertures.

"This is the AGS-4D *Argus*," Thompson said. He flashed a smile, revealing bright white teeth against his dark skin. "Not due out from Achernar and Robinson until next year."

■

After Thompson had gone, Timea leaned back in her chair and shook her head. "I don't like this."

Kovago snorted. "Really? I couldn't tell."

She flashed him a scowl.

Kovago turned to look at Carter. "He obviously didn't recognize you."

The boy looked troubled. "He wasn't in the CMM when I was."

"But he could have transferred in after you left?" Kovago said.

The boy shrugged.

"He's a spy," Timea said tightly.

"Sure," Kovago said, "sent to ferret out the secrets of a small Periphery merc unit." He shook his head. "You're starting to sound as paranoid as the Taurians."

"What if we're not talking about a company of 'Mechs?" she said. "What if the Fed's intel is all jacked up?"

Kovago glanced at Carter. "What about it?"

The boy shook his head. "He's on the level there, at least. I still have friends in the Armington Planetary Militia. They say the pirates always hit with ten 'Mechs, all older designs. They came in on an *Overlord*, so it's not a transport issue. If they had more machines, they would use them."

Kovago nodded.



Timea pressed her lips together in a thin, tight line and folded her arms across her chest.

"So nice job, good pay, chance for repeat business. And then there's the *Argus*."

"That's right," said Timea bitterly. "The *Argus*."

Kovago frowned.

"Why hire us, Attila? Why give us *this*?" She jabbed a hand at the pretty new 'Mech still up on the wall.

"They're not *giving* us the *Argus*, Timea," Kovago said. "They're—"

She closed her eyes. "*Please*. Don't start talking about payment schedules and reduced capital expenditures. I don't think I can take it. They're charging us maybe a quarter of the *Argus*'s value."

"Because it's a prototype and this gives them a chance to test it."

She snorted.

"Tell me it's not a hell of a deal."

"Tell me you're sure you've heard all the terms."

Carter said nothing.

"Look," she said, "what's this clause in the contract about accessing the *Argus*'s battleROM?"

"They're concerned about pirates," Carter said. "They want intel in case some of them get away."

"Then why specify the *Argus*? Why not ask for the battleROMs of the rest of our machines?"

Carter let out an exasperated sigh. "I don't know, Captain."

"Look," Kovago said. "This is getting us nowhere. We're getting a bargain on a state-of-the-art machine. Good money, the chance for future jobs. And we'd be taking down pirates. Doing good work." He leaned toward her, lowered his voice "Timea, this could be our chance to build Black Dawn into something special."

"You know there's more here," Timea said.

"All right," Carter said. "Tell us what it is. What's their nefarious purpose here?"

Timea's eyes burned into the boy's face for a moment. Then she looked away. "I don't know."

"So?" Carter said.

She turned to look at Kovago. "You've never worked for a Great House before," she said softly.

"We've worked for the Taurians," he said.

She shook her head. "A *Great* House. Believe me, the Davions are in a whole 'nother pay grade. Great Houses—well. They have their own rules, Attila. House rules, we used to call them in Reed's Brew."

Carter looked away.

"Reed's Brew," he said softly. "Just because the FedCom tried to throw you into the path of the Clans and then branded you deserters when you refused to stroll into the meat grinder doesn't mean they're going to betray us now, Timea."

"It's not that," she snapped. "It's just that—" She stopped and thought for a moment. "They're playing on such a big board, Attila. They think nothing of throwing away a few pawns."

He studied her face for a moment, then shook his head. "We're going."

Her face tightened and she drew a deep breath. "All right, then. Let's just hope this deal is as good as you think it is."

■

OUTSIDE PIRATE BASE, NORTHERN CONTINENT
UNINHABITED PLANET,
COORDINATES 421.6, –399.2
19 NOVEMBER 3062

The good news was, they hadn't encountered any scouts. They didn't know the system well enough to use a pirate point, so they'd jumped into the nadir, gambling that they wouldn't meet the pirates and ruin the surprise.

They met nothing but black, empty space.

Kovago had brought his small fleet of DropShips in along a looping arc that mostly stayed far below the ecliptic. They touched down a couple hundred klicks from the pirate base, well over the horizon. As of yet, there was no indication their little mission had been uncovered. Kovago might have numbers on the pirates, but that didn't mean he wouldn't also take surprise if he could get it.

The base was a small grouping of buildings clustered along the western bank of a major river that drained into a coastal delta. It wasn't a particularly defensible position, but then, it didn't have to be. Presumably, no one knew the pirates were here.

He'd dispatched Carter's lance to prepare a little action that would be his ace in the hole. His remaining twenty 'Mechs were going to march right into town.

His new *Argus* in the lead.

He drifted up a low hill that offered a nice overlook of the enemy encampment. He pushed through a copse of native trees that looked more like ferns.

And saw a patrol.

Two 'Mechs, an *UrbanMech* and an old FS9-H *Firestarter*. They were a couple klicks out, moving perpendicular to his line of advance, target aspect, left back. The two machines were painted a soft golden yellow with black tiger stripes. Decent camo for the ag worlds they'd been raiding, but it made them stand out against the bright emeralds and kellies of this world's forest. And neither was a particularly frightening design.

Nothing else moved.

If they were lucky, Black Dawn would get most of the enemy machines in their alcoves.

Kovago let out a breath he hadn't realized he'd been holding. He'd been on edge ever since the meeting with Timea. He was relieved this job was actually going as expected.

He reached down and toggled his radio system on. "Strikers, move into town. Try to take down pirate machines before they get loose. Big boys, do the scouts and then move to reinforce strikers. Rabbit in hat for now. Questions?"

No one answered up.

Good, Kovago thought.

"Go," he shouted, and put his *Argus* into a bone-crunching sprint.

He dropped his reticle over the *Firestarter*'s left leg and waited for it to flash gold.

The *Argus* massed 60 tons, but thanks to the 300 XL under the hood it handled more like a light than a heavy. He watched the speedometer climb past sixty to seventy. To *eighty*.

And still climbing.

He got the clear, clean tone of target acquisition in less than a minute. And pulled into his triggers.

The RAC 5 in his right arm shattered the armor protecting the *Firestarter*'s leg, giving his lasers the opportunity to burn into the vulnerable limb underneath.

The *Firestarter* stumbled under the assault.

He hit again as it was turning. This time his one-two punch severed the leg.

The *Firestarter* went down.

The LRMs and the ER lasers gave him plenty of long-range punch and the RAC 5 was a killer in close.

It sure beat his battered old *JagerMech* all to hell.

In his peripheral vision he saw an *Assassin* and a *Whitworth*

pouring LRMs into the doomed *UrbanMech*. So Kovago followed his striker units into the town.

"Striker force, report status."

"Doing good, boss," said Debbie Xu. "We're working our way over to their support facility. It's been pretty quiet so far. I think—"

Her voice was cut off by the shriek of lasers.

"Holy—" Her next words were covered up by the hiss of static. "Where did—" *Static*. "—come from?"

"*Sitrep*," he barked. He pushed his *Argus* into a run. "Xu, *report*."

"Can't—" *Static*. "—jamming."

Jamming. Who had the communications prowess to jam his people's comms?

He got his answer when he turned a corner and saw the sleek shape of a bone-white *Falcon Hawk* tear into Capra's *Locust* with the large laser in its right arm, followed by a blast from a quartet of medium lasers.

Laser? What the hell? The *Hawk* was supposed to have a PPC in its right arm. That made this machine some kind of prototype.

Where the hell had a bunch of pirates gotten such advanced technology?

He dropped his own right arm to help Capra out.

Heavy laser fire ripped into his left side. Instantly, his armor flashed from green to yellow.

He glanced left.

Two more *Falcon Hawks*.

Both bone white.

And suddenly he put it all together. White paint job. Jamming comms. A prototype version of an advanced Free Worlds League design.

Word of Blake.

He pivoted and fired his lasers, but the nimble *Hawk*s had already scurried around a corner.

He turned again, just in time to see the *Locust* fall, its cockpit nothing but melted slag.

He listened to the reports coming in, putting them together with what he'd already seen. Sounded like they were facing the company-sized force they expected, but at least half of the pirates were driving advanced Word designs.

And he'd walked his people right into it.

"All units, this is Kovago. Fall back to the DropShips. We've been double-crossed. Timea, get our people home. Carter, we need your special assistance. Execute."

He stalked his *Argus* forward and ripped into the *Hawk* with his ER lasers, burning right through the creepy white paint job and melting the armor underneath.

The light machine sprinted away, showing Kovago its back. He followed, knowing it had to be a trap, but not caring. He had to give his people time to pull out.

Besides, he'd just seen Capra die.

He cut into the *Hawk*'s light rear armor with his RAC 5, slicing apart the light machine from the back.

The Wobbie reached the edge of town, where the buildings bordered the river. The light 'Mech pivoted to present Kovago with fresh armor.

Just as Carter's lance came walking out of the river and hit it in the back.

For a second the *Falcon Hawk* just stood there, taking the punishment. Then it shuddered and dropped, falling like an unstrung puppet.

Kovago glanced at the skittering shape of the boy's *Spider*. "Come on," he said. "Let's get the hell out of here."

■

Kovago was the last one to reach the DropShips. So he was the one that found Timea's *Orion*, broken and shattered, armor melted off or burned to blackness, myomer bundles sliced and scorched, revealing the gleam of the titanium steel underneath.

The cockpit melted into a tiny, twisted shape that could never accommodate a living human being.

The remnants of the BattleMech embraced an equally dead *Falcon Hawk*. A vivid visual example of the great cost.

Of house rules.

■

BLACK DAWN OFFICES, CENTURY BUILDING, GAMECOCK CHARLESTON, TAURIAN CONCORDAT
12 DECEMBER 3062

The briefing officer stood in his office, his arms folded across his chest. This time wearing an AFFS dress uniform, trousers and jacket in Davion green, spurs on the boots, a golden sunburst taking up the jacket's left side.

Kovago found the uniform unsettling.

When Thompson had first come to them, he'd taken care to hide his identity as a Davion officer from the Taurians. What had changed that allowed him to be so brazen?

"You will find the funds have been deposited into your account from a nearly untraceable source."

"We didn't take the pirates out," Kovago said.

"But you did do the job we contracted for."

Kovago nodded slowly. "You wanted to see how your new *Argus* would perform against some of the newer Blake designs." He shook his head. "I lost seven people on that mission. Why didn't you tell us what we were up against?"

"Would you have gone?"

"*What the hell difference does that make*?" Kovago roared.

"It makes all the difference in the world," the other man said softly.

"You son of a bitch," Kovago muttered.

Thompson nodded. "That's right. To wield power, you have to be a son of a bitch. Someday the Federated Suns may find itself facing Word of Blake across the battlefield. When that happens, we need to be ready. It will mean *millions* of lives. Are your seven people really more important than that?"

"They were," Kovago said, "to me."

Thompson drew a deep breath. "I'll take the feed from your battleROM now."

Kovago slowly shook his head. "No."

Thompson took a step forward. "My dear man. I need that data to evaluate the *Argus*'s performance. If you do not give it to me, you'll find that our relationship just might come to light."

A light clicked on. "'Nearly untraceable," Kovago said.

"That's right," Thompson said.

"So you sell us out to the Taurians. Let them know we've been doing business with the Davions behind their backs."

"Something like that."

"You *are* a spy. DMI or..." Kovago paused. "MIIO," he hissed.

Thompson's lips curled into a smile. "Really think that'll get you off the hook with the Taurians? Working with a Davion spy?"

Kovago suddenly found his mouth was dry and his limbs felt weak. Somehow he found the strength to reach into his desk and pull out the datachip from his battleROM.

Thompson, or whatever his name was, favored him with a mock bow. "A pleasure, sir."

Kovago closed his eyes. He heard the door click shut behind the Fed spy. He'd forgotten the most important house rule.

The House always wins.



Ingenious techs tap a buried electrical cable to power their make-shift gantry and tools to field-repair a heavily damaged BattleMaster.

"Davion components. Capellan components. All same. Made in Free Worlds League!"

—Sergei Ivanovich, Chief Tech, Tooth of Ymir Mercenary Regiment

In a stand-alone game of *BattleTech*, players usually begin with undamaged 'Mechs, ProtoMechs, vehicles, aerospace units and infantry. However, in a multi-battle campaign (or a series of linked campaigns), players can elect to use the following maintenance, repair, salvage and customization rules. The rules help to bring a feel of gritty reality to a campaign as players struggle to find parts and repair damaged units in the few quiet moments between battles. More detailed rules governing the creation and operation of a military command—which further helps to flesh out the reality of the universe, working hand-in-hand with these rules—appears in *Interstellar Operations*.

The following definitions provide a framework on which these rules build.

Quality Rating: The Quality Rating indicates the condition of each unit. When routine maintenance is not performed, the unit's Quality Rating can drop, increasing the need for maintenance and the possibility of system failures. This rating is similar to the Availability and Technology ratings used in the *BattleTech TechManual* and *A Time of War: BattleTech RPG*.

Support Personnel: Often overlooked, the efforts of support personnel both on and off the battlefield are essential to keeping a 31st-century command combat-effective. The term "support personnel" is used to describe all noncombatant members of a command.

Maintenance: Even when not used in battle, the high-tech weapons of the 31st century require constant maintenance to stay in perfect fighting trim. Between each round of battles, support personnel must perform preventative maintenance on all active combat units.

Repair and Replacement: After a battle, a player can repair any unit not destroyed, ready to throw it into the next fight. Some of the holes in the ranks may be filled with new equipment and personnel.

Salvage: By salvaging parts from fallen units, a player can keep others at fighting strength. Captured enemy units can also be used to replace combat losses.

Customization: By design or necessity a player may customize a unit. The parts necessary to complete a repair might not be available, or perhaps a player wants more armor on his *JagerMech*. Or maybe that *UrbanMech* would work better with a targeting computer. Such customization can be endless.

OPTIONAL RULES

Optional rules are presented throughout this section. These rules add more levels of detail, but also significantly increase the complexity and amount of information that players are required to track. It is recommended that players reserve optional rules for situations where each player is responsible for only a small number of units.

TIME (MAINTENANCE/REPAIR CYCLE)

Unless agreed otherwise (or dictated by the conditions of a specific scenario), players have eight hours between each scenario during which they can carry out maintenance and repairs. If players are tracking time across days, weeks, months and so on, then each day provides eight hours of productive work. This is referred to as the Maintenance/Repair Cycle.

Overtime: Between campaigns a Technical Team can push to work an additional 8 hours a day, but such efforts will provide only 4 additional hours of productive work.

SKILL CHECKS

Skill checks are dice rolls of 2D6 or 3D6—depending on the situation—made against a target number based on the Experience Rating of a Technical or Medical team (see *Support Personnel*, p. 168), modified for various situations. Each type of roll described in this section includes the name of the roll for clarity, such as Maintenance Check, Replacement Check and Repair Check for Technician Skill Checks, Wounded Check for a Medical Skill Check, and so on.

UNIT QUALITY

All units start with a Quality Rating based on their construction or (in the case of conventional infantry) training and equipment. The Quality Rating Table (see below) gives an overview of the average Quality Rating players can expect in each *BattleTech* era. If so desired, players can use the more detailed Faction Quality Table (see below). If players elect to use neither faction nor era variations for unit quality, then all units start the campaign with a Quality Rating of D (Average).

Wear and tear, battle damage and maintenance cause a unit's Quality Rating to change over time.

QUALITY RATING TABLE

Quality Rating	Description	Cost Modifier	Notes
A	Salvage	0.8	
B	Poor	0.9	Lesser Periphery States
C	Fair	0.95	Late Succession Wars
D	Average	1.0	Early Succession Wars, Age of War, IS Post Succession Wars
E	Good	1.1	Star League Member States, ComStar, Word of Blake
F	Excellent	1.3	Clan, Terran Hegemony

Quality Rating: The letter code used to indicate a unit's overall condition, running from A (Salvage) to F (Excellent).
Description: A catchall description of the Quality Rating.
Cost Modifier: During a campaign the opportunity may arise for players to buy or sell units. The quality of the unit in question can adjust the price.
Notes: General notes indicating the era and/or faction for which the Quality Rating is considered typical.

FACTION QUALITY TABLE

Faction	AoW	RW	SL	1SW	2SW	3SW	4SW	Clan	Jihad
Capellan Confederation	C	D	E	E	D	C	C	C	D
Chaos March	—	—	—	—	—	—	—	D	—
ComStar	—	—	—	E	E	E	E	E	E
Clans	—	—	—	E	E	F	F	F	F
Draconis Combine	C	D	E	E	D	C	C	D	E
Federated Suns†	C	D	E	E	D	C	D	E	E
Free Worlds League	C	D	E	E	D	C	C	E	E
Free Rasalhague Republic	—	—	—	—	—	—	C	D	E
Lyran Commonwealth†¥	C	D	E	E	D	C	D	E	E
Terran Hegemony	D	E	F	—	—	—	—	—	—
Word of Blake	—	—	—	—	—	—	—	E	E
Outworlds Alliance	B	B	C	C	C	C	C	D	D
Taurian Concordat	C	C	C	B	C	C	C	D	D
Magistracy of Canopus	C	C	C	B	C	C	C	C	D
Rim Worlds Republic	C	C	C	—	—	—	—	—	—
Periphery (Other)	C	C	C	B	B	B	B	C	C
Mercenary	C	C	D	D	C	C	C	D	D

Age of War (AoW): 2398 to 2569 **Reunification War (RW)**: 2570 to 2597 **Star League (SL)**: 2598 to 2784
First Succession War (1SW): 2785 to 2827 **Second Succession War (2SW)**: 2828 to 2863 **Third Succession War (3SW)**: 2864 to 3027
Fourth Succession War (4SW): 3028 to 3049 **Clan Invasion (Clan)**: 3050 to 3066 **Jihad**: 3067 and later

†The Lyran Commonwealth and Federated Suns combined to form the Federated Commonwealth during the Clan Invasion era.
¥The Lyran Commonwealth became the Lyran Alliance during the Clan Invasion and Jihad eras.

RANDOM ASSIGNMENT TABLES

A unit's Quality Rating is different from the Equipment Rating used in the Random Assignment Tables found in the *Field Manual* series and other *BT* products. If players are generating their forces from these tables, the equivalent Quality Rating can be found on the Equipment Rating Table.

EQUIPMENT RATING TABLE

Quality Rating	Description	Field Manual Equipment Rating	Brush Wars Equipment Rating
A	Salvage	—	—
B	Poor	—	3
C	Fair	F	2
D	Average	C, D	1
E	Good	A, B, Clan Second Line	—
F	Excellent	Clan Front Line	—

SUPPORT PERSONNEL

In the 31st century, a fighting unit depends on its support personnel to keep it combat ready. The following rules assume an exceptionally well-supported force. At their discretion players may decide to use less personnel and risk the consequences.

Support personnel fall into two distinct categories: Technical and Medical. Unless determined otherwise, support personnel have a Regular Experience Rating. If they wish, players can use the Random Experience Rating Table (see p. 273, *TW*) to determine the Experience Rating of each Technical and Medical team.

TECHNICAL PERSONNEL

Techs (Technicians) and astechs (Assistant Technicians) are vital to the survival of any modern fighting force. Without them, repairs would be difficult and upgrades or modification impossible. Even reloading ammunition presents the MechWarrior in the field with a major challenge.

A full-strength Technical Team consists of one tech and six semi-skilled astechs. Such a team is commonly assigned to work on a specific 'Mech (a BattleMech or IndustrialMech), Point of ProtoMechs, a vehicle or a battle armor unit. A Technical Team assigned to support conventional infantry can support up to four units. Technicians are classified by specific skills they possess, which in turn dictate the type of unit they support. Additional unassigned teams can be used to augment these when they are not deployed on search and rescue or salvage operations. As a rule of thumb, a player receives one unassigned team of his or her choice for every four assigned teams.

Each type of technician can work on other types of units, but the controlling player must roll 3D6 when making Technician Skill Checks and use the lowest two dice as the result. This reflects the fact that all technicians possess similar general abilities, but may lack the specific training to work on other types of units effectively.

A Technical Team is assigned to a 'Mech or vehicle. If the assigned unit needs no repairs or the team finishes those repairs with time to spare, they can help another team to work on a different machine. Two teams cannot work simultaneously on the same task, but they can divide the tasks between them to save time.

It is common practice for a 'Mech, fighter, or other vehicle to be accompanied only by a Technician during transport (and the appropriate vehicle bay included provision for their accommodation and life support needs). When the unit reaches its destination the Technician then draws on a common pool of AsTechs to form a technical team.

Technician/'Mech: This Technical Team is trained to maintain 'Mechs and ProtoMechs.

Technician/Mechanic: This Technical Team is trained to work on Combat and Support Vehicles (except for Fixed-Wing Support Vehicles, Airships and Large Naval Vessels) and support conventional infantry.

Technician/Aerospace: These Technical Teams are trained to support Small Craft, fighters (aerospace and conventional), Satellites, Fixed-Wing and Airship Support Vehicles.

Technician/Battle Armor: These Technical Teams are assigned to work with squads, Points or Level Is of infantry equipped with battle armor (as well as exoskeletons).

Clan Technology

Because of their unfamiliarity with advanced Clan technology, Inner Sphere technicians remain at a disadvantage when working on Clan-built equipment (reflected on the appropriate tables with a negative modifier).

Technical Teams on the Battlefield

If called for during a scenario, Technical Teams are represented during play as individual 7-man rifle (ballistic) infantry squads with Gunnery and Anti-'Mech Skill Ratings listed on the Support Personnel Experience Table (see below).

Crew

WarShip, JumpShip, DropShip, Space Station, Large Naval Vessel Support Vehicle and Mobile Structure crews provide the necessary technical support for their units. They cannot perform maintenance on other unit types, nor can they be augmented with additional Technical Teams.

WarShips, JumpShips, DropShips, and Space Stations can provide assistance to a similar unit to which it is physically docked (see p. 66). The crew can provide up to a quarter of their available

SUPPORT PERSONNEL EXPERIENCE TABLE

Experience Rating	Base Skill Target		Combat Skills	
	Technical	Medical	Gunnery	Anti-'Mech
Green	9+	10+	8/*	8/*
Regular	7+	8+	8/*	7/*
Veteran	6+	7+	7/*	6/*
Elite	5+	6+	7/*	5/*

*A Medical Team can make attacks as though it is a foot (rifle, ballistic) platoon with a Gunnery Skill of 5; it cannot make Anti-'Mech attacks, however (see *Medical Teams on the Battlefield*, p. 169).

time to provide aid to other units, adjusted by the relative crew sizes. Large Naval Support Vehicles can likewise provide support to Large Naval Support Vessels when alongside. Again, this is adjusted by the relative crew size.

An Avalon*-class cruiser with a crew of 198 is being assisted by a* Fox*-class corvette with a crew of 124. The corvette crew can provide up to 2 hours of work, but because of the relative sizes of the craft they can provide only up to 75 minutes of work to the repair effort (124 ÷ 198 x 120 = 75.15, round to 75).*

When docked at a fully equipped space yard, yardship, or port the time required to perform maintenance and repairs is reduced to half.

MEDICAL PERSONNEL

Just as Technical Teams minister to the needs of a command's equipment, Medical Teams keep the men and women who operate it in fighting shape. Each team consists of a doctor and four assistants (medics and nurses). Unlike Technical Teams, they are not attached to an individual unit. A combat force possesses one Medical Team for each operating theater (see *MASH Equipment*, p. 228, *TM*) installed in the command's attached Support Vehicle contingent. Each DropShip, JumpShip or Large Naval Vessel Support Vehicle also carries the equivalent of a Medical Team as part of its crew. WarShips have the equivalent of two Medical Teams per 100 individuals incorporated into their crew, while a Space Station has three per 100 individuals. A unit can augment this allotment of personnel by including additional operating theaters in its design.

Medical Teams on the Battlefield

A Medical Team normally rides inside the vehicle that carries their operating theater. If events call for them to dismount their vehicle, they are treated as a 5-man infantry foot (rifle, ballistic) platoon. The Medical Team (now platoon) is placed into an adjacent legal hex; if the crew cannot enter a legal hex they cannot dismount the vehicle. In the turn after they dismount their vehicle, the Medical Team can move and make attacks exactly like a foot (rifle, ballistic) platoon with a Gunnery Skill of 5 for the remainder of the scenario (however, such a unit cannot make Anti-'Mech attacks).

MAINTENANCE

The sophisticated weapons and equipment used on the 31st-century battlefield require constant maintenance. Even if a unit is not deployed for battle, it must undergo some degree of preventative maintenance to avoid deterioration in its Quality Rating. The time required for maintenance of specific unit types can be found on the Unit Maintenance Time Table (see p. 170).

Between each game in an ongoing campaign, the Technical Team assigned to each active unit (one not classified as dead or destroyed; see *Destroyed vs. Truly Destroyed*, p. 175, and *Mostly Dead vs. Truly Dead*, p. 176) must make a Maintenance Check. This check is made by rolling 2D6 and using the team's Technical Skill target number (TN), modified as appropriate from the Maintenance, Repair and Salvage Check Modifiers Table (see p. 170), to find the Margin of Success (MoS) or Failure (MoF). This value is then cross-referenced with the unit Quality Rating on the Maintenance Check Table (see p. 172) to find the results of the maintenance effort. More than one Technical Team can be assigned to the effort, but doing so means that another unit may go unattended. Unattended units still make Maintenance Checks, but use a base TN of 10 instead of the TN indicated by the Skill Rating of a Technical Team. Maintenance on WarShips, JumpShips, Space Stations, DropShips, Large Naval Vessel Support Vehicles and Mobile Structures cannot be augmented with additional Technical Teams.

Damage suffered as a result of a failed Maintenance Check can be repaired before the next battle if time permits.

Conventional Infantry: Rifle (Ballistic) conventional infantry represent an exception and have no maintenance requirement.

Unit Tech Rating: A unit's technological sophistication has an impact on ease of maintenance. Unless noted otherwise, conventional infantry has a Tech Rating of B.

Unit Quality Rating: The overall quality of the unit likewise affects ease of maintenance. An AS7-D *Atlas* fresh off the production lines of Hesperus II presents a Technical Team with far less of a challenge than a centuries-old CLNT-2-3T *Clint* reduced to little more than a shambling pile of jury-rigged components salvaged from the battlefields of the Succession Wars.

Era Modifier (Optional): Players who desire a more authentic setting for games in different eras of the historical game universe (to work with weapon introduction dates as supplied in the *TechManual*) can apply Era Modifiers in addition to other standard modifiers. These modifiers make the acquisition and maintenance of advanced technology progressively harder throughout the Succession Wars era. In addition, the quality of individual units tends to degrade in order to produce the characteristic "signature" indicative of that period.

A mighty AS7-D Atlas *fresh off the Defiance Industries production line on Hesperus II has a Tech Rating of D (+1) and a Quality Rating of D (+0). A Veteran Technical Team (TN 6+) performs routine maintenance using a 'Mech cubicle aboard a DropShip (+0), requiring a Maintenance Check against a modified Target Number of 7 [6 (Veteran Skill Rating) + 1 (Tech Rating D) + 0 (Quality Rating D) + 0 (aboard a DropShip) = 7]. Rolling 2D6, Bob gets a result of 9. Consulting the Maintenance Check Table, he sees that a Margin of Success or Failure of 2 is sufficient to keep the* Atlas *in fighting trim.*

A battered veteran of the Succession Wars, a CLNT-2-3T Clint *has a Tech Rating of D (+1) and a Quality Rating of B (+2). The Regular vehicle Technical Team (TN 7+, but working outside their specialty) has been forced to perform maintenance in the field (+2), requiring a Maintenance Check against a modified Target Number of 12 [7 (Regular Skill Rating) + 1 (Tech Rating D) + 2 (Quality Rating B) + 2 (field repair) = 12]. Rolling 3D6 and discarding the highest-value die, Jane gets a result of 7. Consulting the Maintenance Check Table, Jane sees that a Margin of Failure of 5 (12 – 7 = 5) requires that she make a roll on the 'Mech Damage Status Table. Rolling an 8 gives a result of "1D6 heat sinks destroyed". Jane rolls the 1D6 and gets a 3, so she marks off three of the* Clint*'s ten heat sinks on the record sheet.*

UNIT MAINTENANCE TIME TABLE

Unit Type	Maintenance Time
Ultra-Light 'Mech	30 minutes
Light 'Mech	45 minutes
Medium 'Mech	60 minutes
Heavy 'Mech	75 minutes
Assault 'Mech	90 minutes
ProtoMech	20 minutes
Battle Armor (per suit in unit)	10 minutes
Conventional Infantry (per squad)	
Foot, Rifle	0 minutes
Foot, Other	10 minutes
Jump	30 minutes
Mechanized	30 minutes
Motorized	20 minutes
VTOL	40 minutes
Other	20 minutes
Light Combat Vehicle	30 minutes
Medium Combat Vehicle	50 minutes
Heavy Combat Vehicle	75 minutes

Unit Type	Maintenance Time
Assault Combat Vehicle	90 minutes
Super-Heavy Combat Vehicle	120 minutes
Small Support Vehicle*	20 minutes
Medium Support Vehicle*	35 minutes
Large Support Vehicle*	100 minutes
Large Naval Vessel Support Vehicle	4 hours
Satellite Support Vehicle	60 minutes
Conventional Fighter	45 minutes
Light Aerospace Fighter	45 minutes
Medium Aerospace Fighter	60 minutes
Heavy Aerospace Fighter	75 minutes
Small Craft	90 minutes
DropShip	3 hours
JumpShip	6 hours
Space Station	19 hours
WarShip	24 hours
Mobile Structure	1 hour (per hex)

*Covers all Support Vehicles, except for Large Naval Vessels and Satellites.

MAINTENANCE, REPAIR AND SALVAGE CHECK MODIFIERS TABLE

TECH RATING MODIFIERS

Tech Rating	Modifier
A	–4
B	–2
C	+0
D	+1
E	+2
F	+3

UNIT QUALITY RATING MODIFIERS

Unit Quality Rating	Modifier
A	+3
B	+2
C	+1
D	+0
E	–1
F	–2

ERA MODIFIERS (OPTIONAL)

Faction	AoW	RW	SL	1SW	2SW	3SW	4SW	Clan	Jihad
Capellan Confederation	+1	+0	+0	+1	+2	+3	+2	+1	+0
Chaos March	—	—	—	—	—	—	—	+0	—
ComStar	—	—	—	+0	+0	+0	+0	+0	+0
Clans	—	—	—	+0	+0	+0	+0	+0	+0
Draconis Combine	+0	+0	+0	+1	+2	+2	+1	+0	+0
Federated Suns	+0	+0	+0	+1	+2	+2	+1	+0	+0
Free Worlds League	+0	+0	+0	+1	+2	+3	+1	+1	+0
Free Rasalhague Republic	—	—	—	—	—	—	+2	+1	+0
Lyran Commonwealth	+0	+0	+0	+1	+2	+3	+2	+0	+0
Terran Hegemony	–1	–1	–1	—	—	—	—	—	—
Word of Blake	—	—	—	—	—	—	—	+0	+0
Outworlds Alliance	+1	+1	+1	+1	+2	+3	+2	+1	+0
Taurian Concordat	+0	+0	+1	+1	+2	+3	+2	+1	+0
Magistracy of Canopus	+1	+1	+1	+1	+2	+3	+2	+1	+1
Rim Worlds Republic	+1	+1	+1	—	—	—	—	—	—
Periphery (Other)	+1	+1	+1	+1	+2	+3	+2	+2	+1
Mercenary	+1	+1	+1	+1	+2	+3	+2	+1	+0

MAINTENANCE, REPAIR AND SALVAGE CHECK MODIFIERS TABLE (CONTINUED)

TECHNICIAN TYPE MODIFIERS

Technician Type	Modifier
Inner Sphere Technical Team working on Clan Tech	+2
Per additional Team	–1*

*To a maximum of 3 teams per unit; maintenance on WarShips, JumpShips, Space Stations, DropShips and Large Naval Vessel Support Vehicles cannot be augmented with additional Technical Teams.

TEAM CASUALTY MODIFIERS

Technical/Medical Team Casualties*	Modifier
None	+0
1	+1
2	+1
3	+2
4	+2
5	+3
6	+4

*For simplicity, the Technician/Doctor is always as assumed to be the last individual to be eliminated.

CREW HITS MODIFIERS

Crew Hits Taken	Modifier
0	+0
1	+1
2	+1
3	+2
4	+3
5	+4

LOCATION MODIFIERS

Location	Modifiers
In the Field*	+2
Mobile Field Base**	+1
In Transport Bay†	+0
Maintenance Facility‡	–2
Factory Conditions§	–4

*Tools and access gantries are improvised or nearly non-existent, minimal protection against elements, variable lighting

**More extensive tool access, dedicated maintenance vehicle mounting Salvage Arm, Lift Hoist, and so on, but still variable lighting and minimal protection against elements; the Mobile Field Base equipment (see p. 33, *TO*) automatically applies this modifier without the need for the unit mounting that equipment to also mount a salvage arm, lift hoist and so on, as described.

†Complete shelter, ideal lighting, and access to extensive tools and unit-appropriate gantries.

‡Any tool needed, ideal conditions, cannot build any part from scratch but enough resources available to cobble together "best fits" and "solid bypasses" that almost pass for the real thing.

§Any tool or fabrication equipment needed to build from scratch any part, ideal conditions (factory must be designed to build the unit type in question; i.e. if the factory doesn't build an aerospace unit, then it would only be considered a maintenance facility for that unit type)

PLANETARY CONDITIONS MODIFIERS

Planetary Conditions	Modifiers*
Zero-G	+2
Low-G (less than 0.8 of Terran standard)	+1
High-G (more than 1.2 of Terran standard)	+2
Very High-G (2.0 or more higher than Terran standard)	+4
Vacuum or Tainted Atmosphere (due to bulky suits)	+2
Trace or Very High Pressure Atmosphere	+1
Extreme Temperatures† (due to suits and/or other apparatus)	+1
Heavy Snow Fall/Ice Storm/Lightning Storm/Strong Gale/Torrential Downpour	+1
Blizzard/Storm/Tornado	+2
Moonless Night/Solar Flare‡	+1
Pitch Black‡	+2

* If outside of a sealed structure/building/unit †If higher than 50 degrees C, or less than –30 degrees C ‡If no lights/cover available

MAINTENANCE, REPAIR AND SALVAGE CHECK MODIFIERS TABLE (CONTINUED)

DROPSHIP/JUMPSHIP/WARSHIP MODIFIERS

Location Modifiers	Modifiers
On Planetary Surface (DropShip only)	–1
Naval Repair Facilities (Unpressurized Yard) (see p. 334, *TO*)	–3
Naval Repair Facilities (Pressurized Yard) (see p. 334, *TO*)	–5

OTHER MODIFIERS

Other Factors	Modifiers
Clan/Inner Sphere Incompatibility	+4
Experimental or "Extinct" Component*	+2
Rush Job	Variable
Extra Time	Variable
Working Overtime	+3
Jury-Rigging	Variable
Fabricating	+2

*An Experimental Component is any item with an Experimental Rules Level (see p. 275, *TO*)

MAINTENANCE CHECK TABLE

	Quality Rating					
	A	B	C	D	E	F
MoF						
7+	Destroyed	Q-A (2)	Q-B (2)	Q-C (1)	Q-D (1)	Q-E (1)
6	(3)	Q-A (1)	Q-B (1)	Q-C (1)	Q-D (1)	Q-E
5	(3)	(1)	Q-B (1)	Q-C (1)	Q-D	Q-E
4	(2)	(1)	(1)	Q-C	Q-D	Q-E
3	(1)	(1)	—	—	Q-D	Q-E
2	(1)	—	—	—	—	—
1	—	—	—	—	—	—
MoS						
0	—	—	—	—	—	—
1	—	—	—	—	—	—
2	—	—	—	—	—	—
3	—	—	—	—	—	—
4	Q-B	Q-C	—	—	—	—
5	Q-B	Q-C	Q-D	Q-E	—	—
6+	Q-B	Q-C	Q-D	Q-E	Q-F	*

Q–N: The unit Quality Rating changes to a new value, with N the new value as noted on the table. For example a MoF of 5 on a D Quality Rating unit would result in the unit downgrading to Quality Rating C, while a MoS of 5 on a Quality Rating B unit would result in the unit upgrading to Quality Rating C.

(X): Roll X times on the appropriate Damage Status Table, with X equal to the value on the table. For example a MoF of 5 on an A Quality Rating unit would result in 3 rolls on the appropriate Damage Status Table.

Destroyed: Unit has been rendered inoperative

*Award 1 Experience Point, beyond any other Experience Points awarded during a scenario; a Tech Team may only be awarded 1 such extra Experience Point per Maintenance/Repair Cycle (see *Experience*, p. 187).

'MECH DAMAGE STATUS TABLE

2D6 Roll	Damage
2	Roll twice for damage; if rolled again when determining both damage, re-roll
3	1 randomly determined jump jet critical slot destroyed (1D6 armor damage to a random location if no jump capability)
4	1 randomly determined engine critical slot destroyed
5	1 critical hit to a random location/slot (treat ammunition as destroyed, but do not apply explosion damage)
6	1 randomly determined weapon generates 2 additional points of heat (even if the weapon could not previously generate heat)
7	1D6 armor damage to a random location
8	1D6 heat sinks destroyed; start with heat sinks internal to the engine, then (regardless of heat sink type) mark off all critical slots for any included on the Critical Hit Table
9	1 randomly determined weapon fails when fired on a 2D6 roll of 9+ (this roll made before to-hit roll)
10	1D6 armor damage to two random locations
11	1 randomly determined gyro critical slot destroyed
12	1 randomly determined sensor critical slot destroyed

PROTOMECH DAMAGE STATUS TABLE

2D6 Roll	Damage
2	Roll twice for damage; if rolled again when determining both damage, re-roll
3	A jump jet is damaged; reduce Jumping MP by 1 (1D6 damage to a random location if no jump capability)
4	Reduce Walking MP by 1 and recalculate Running speed
5	1 critical hit to a random location (treat ammunition as destroyed, but do not apply explosion damage); apply critical to the left-most open square in the Hit Locations and Critical Hits table
6	1 randomly determined weapon is destroyed
7	1D6 armor damage to a random location
8	Reduce Walking MP by 1 and recalculate Running speed
9	1 randomly determined weapon fails when fired on a 2D6 roll of 9+ (this roll made before to-hit roll)
10	1D6 armor damage to two random locations
11	1 critical hit to a random location (treat ammunition as destroyed, but do not apply explosion damage); apply critical to the left-most open square in the Hit Locations and Critical Hits table
12	1 critical hit to the head; apply critical to the left-most open square in the Hit Locations and Critical Hits table

VEHICLE DAMAGE STATUS TABLE

2D6 Roll	Damage
2	Roll twice for damage; if rolled again when determining both damage, re-roll
3	1D6 armor damage to three random locations
4	Reduce Cruising speed by 1 and recalculate Flanking speed
5	1 critical hit to a random location (treat ammunition as destroyed, but do not apply explosion damage)
6	1 randomly determined weapon is destroyed
7	1D6 armor damage to a random location
8	Reduce Cruising speed by 1 and recalculate Flanking speed
9	1 randomly determined weapon fails when fired on a 2D6 roll of 9+ (this roll is made before to-hit roll)
10	1D6 armor damage to two random locations
11	Turret jammed (reduce Cruising speed by 2 and recalculate Flanking speed if no turret is present)
12	1 Sensor critical hit assigned to the left-most open square on the Critical Damage Table

AEROSPACE DAMAGE STATUS TABLE

2D6 Roll	Damage
2	Roll twice for damage; if rolled again when determining both damage, re-roll
3	1 Avionics critical hit assigned to the left-most open square on the Critical Damage Table
4	1 Engine critical hit assigned to the left-most open square on the Critical Damage Table
5	1 critical hit to a random location (treat ammunition as destroyed, but do not apply explosion damage)
6	1 randomly determined weapon or weapon bay destroyed
7	1D6 armor damage to a random location
8	1D6 heat sinks damaged (ICE-powered units reduce Safe Thrust by 1; recalculate Maximum Thrust)
9	1 randomly determined weapon or weapon bay fails when fired on a 2D6 roll of 9+ (this roll is made before to-hit roll)
10	1 critical hit to a random location (treat ammunition as destroyed, but do not apply explosion damage)
11	1 FCS or CIC critical hit assigned to the left-most open square on the Critical Damage Table
12	1 Sensor critical hit assigned to the left-most open square on the Critical Damage Table

BATTLE ARMOR DAMAGE STATUS TABLE

1D6 Roll	Damage
1	Roll twice for damage; if rolled again when determining both damage, re-roll
2	1 battle armor suit destroyed
3	1D6 damage to random battle armor suit
4	1D6 damage to random battle armor suit
5	1D6 damage to two random battle armor suits
6	Two battle armor suits destroyed

CONVENTIONAL INFANTRY DAMAGE STATUS TABLE

1D6 Roll	Damage
1	Roll twice for damage; if rolled again when determining both damage, re-roll
2	Reduce the Max Weapon Damage Per Platoon value on the Conventional Infantry Damage Table by 1 point along each column of numbers of troopers
3	1D6 troopers "killed"
4	Reduce MP by 1 (or if MP will be reduced to zero, reduce the Max Weapon Damage Per Platoon value on the Conventional Infantry Damage Table by 1 point along each column of numbers of troopers)
5	1 Support weapon destroyed (if no Support Weapon available, reduce the Max Weapon Damage Per Platoon value on the Conventional Infantry Damage Table by 2 points along each column of numbers of troopers)
6	Unit loses special movement capability (Jump, VTOL and so on; if no special movement capability exists, reduce the Max Weapon Damage Per Platoon value on the Conventional Infantry Damage Table by 1 point along each column of numbers of troopers)

ADVANCED MAINTENANCE (OPTIONAL)

Players can choose to use advanced maintenance rules where each component of a unit is checked individually. In a multi-unit campaign this is an unrealistic task, but when players control only one or two units (such as in an *A Time of War: BattleTech RPG* campaign), they may enjoy playing with this added level of detail. Each component (weapons, sensors, gyro, heat sinks, engine, actuators and so on), armor location, and internal structure location or structural integrity makes its own Maintenance Check using an additional –1 modifier to the TN. Any component without a listed Tech Rating uses the overall Tech Rating of the unit (which is customarily the highest Tech Rating of any component used).

If the check fails, consult the Maintenance Check Table (see p. 172). When directed to roll on the appropriate Unit Damage Status Table, treat the component being checked as damaged. In the case of 'Mechs, the number will be the critical hits received (up to the total critical spaces occupied by the component). Ammunition and explosive weapons (such as Gauss rifles) do not explode. Armor, internal structure and structural integrity that fail the check receive 1 point of damage (except in the case of JumpShips and Space Stations, which assign 1D6 capital-scale armor damage to a randomly determined location). The Quality Ratings of individual components are adjusted as directed and must be tracked individually by the players.

No unit personnel can be harmed during maintenance; for example, a cockpit critical hit will not kill the MechWarrior.

Sam is using the advanced maintenance rules to check the condition of his AXM-1N Axman. *Maintenance is being performed in a 'Mech cubicle aboard his company's* Union-*class DropShip. The BattleMech has a Quality Rating of E (Good), except for the gyro that was reduced to D (Average) during the last maintenance cycle. Sam has a Regular Technical Team working on his BattleMech.*

Checking the weapons, Sam sees that the Autocannon 20 and its ammunition have Tech Rating C, the medium lasers are C, the large pulse laser is E and the hatchet is B. The XL fusion engine is Tech Rating E, the gyro D, the ten double heat sinks E, the cockpit D, the sensors E, life support C, jump jets D, internal structure D, ferro-fibrous armor E and all actuators are C. The base Target Number for the Maintenance Check is 7 and the maintenance work is being performed in a transport cubicle (+0). Because Sam is using the advanced maintenance rules, the TN receives an additional –1 modifier, giving a pre-modified Target Number of 6. This TN will be further modified by the Tech and Quality ratings of each component.

Starting with the weapons, Sam notes that his modified Target Number for the autocannon and medium lasers is 5 [6 (pre-modified Target Number) – 1 (Quality Rating E) = 5]. Sam's Maintenance Checks are successful and the weapons survive unscathed. Next, he checks the large pulse laser. With a higher Tech Rating, the modified Target Number for this weapon is 7 [6 (pre-Modified Target Number) – 1 (Quality Rating E) + 2 (Tech Rating E) = 7]. Rolling only a 4, Sam makes a note that the Quality Rating of the pulse laser has dropped to D. Checking the rest of his Axman, *Sam notes that two heat sinks, a jump jet, the lower left leg actuator and the upper right leg actuator likewise drop in quality.*

Finally, Sam checks the condition of the already-degraded gyro. The modified Target Number is 7 [6 (pre-modified Target Number) + 0 (Tech Rating D) + 1 (Quality Rating D) = 7]. With an appalling roll of 2, the gyro not only drops to Quality Rating C, but also takes a critical hit. The Technical Team must now attempt to repair or replace the damaged component.

MOTHBALLS (OPTIONAL)

Players can choose to place units in mothballs to avoid the ongoing need for maintenance. For most types of units this process requires a full-strength Technical Team (or several under-strength teams with a combined body count equal to or greater than that of a full-strength team) and will take two entire Maintenance/Repair Cycles, during which the Technical Team(s) can perform no other activity. No Maintenance Check is required during the current cycle, and no additional Maintenance Checks are necessary until the unit is brought back out of mothballs. While in mothballs, no repairs or replacements can be performed—though parts can be removed according to the rules for salvage (see p. 191). Mothballed battle armor and conventional infantry units take one Maintenance Cycle to mothball their equipment, and the troopers are converted to Conventional Rifle (Ballistic) Infantry of equivalent strength.

To remove a unit from mothballs again requires the services of a full Technical Team for the duration of a Maintenance/Repair Cycles.

The time required to place larger units (WarShips, DropShips, JumpShips, Space Stations and Large Naval Vessel Support Vehicles) in mothballs is equal to one Maintenance/Repair Cycle per 500 tons. The same amount of time is required to return them to operational status.

REPAIR AND REPLACEMENT

Provided a unit is not completely destroyed, it is possible (given sufficient time and resources) for a player to repair some or all damage inflicted on it.

DESTROYED VS. TRULY DESTROYED

A unit may be classified as destroyed during a *BattleTech* game (see p. 128, *TW*; also p. 172, *TO*) or when its Quality Rating degrades beyond A. However, there are times when a "destroyed" unit, in terms of a scenario, is not truly destroyed. In other words, it may be possible for a unit considered destroyed in a scenario to return to an operational state through the efforts of the player's Technical Teams.

The following represents "truly destroyed" situations, when a unit cannot be brought back.

'Mechs: A 'Mech is truly destroyed when its center torso internal structure is eliminated. Some components may be salvageable, but the 'Mech itself cannot be returned to service.

ProtoMechs: A ProtoMech is truly destroyed when its torso internal structure is eliminated. Some components may be salvageable, but the ProtoMech itself cannot be returned to service.

Vehicles: A vehicle is truly destroyed if it explodes as the result of a fuel tank critical hit or the internal structure in any one of its hit locations—except for turrets or rotors—is eliminated. Again, it is possible to salvage some components from the wreckage.

Aerospace: Conventional and aerospace fighters, Small Craft, Fixed-Wing and Airship Support Vehicles are truly destroyed when their SI is eliminated. Components from the craft may be salvageable, depending on the circumstances.

DropShips, JumpShips, WarShips, Satellites and Space Stations: Like other aerospace units, these Large Craft are considered truly destroyed when their SI is eliminated.

Mobile Structures: Mobile Structures are truly destroyed if more than half the hexes of the unit are destroyed.

Complete Destruction: Any ground unit is considered completely destroyed if it is destroyed by an area effect weapon centered on the hex occupied by the unit.

A ground or aerospace unit is also completely destroyed if destruction occurs through an ammunition explosion (unless it is equipped with CASE). In such circumstances there will be no salvageable components.

In the case of aerospace units, provided they do not burn up during an uncontrolled reentry or collide with an asteroid, components can be salvaged from the wreckage. Crashed

aerospace units are also completely destroyed unless the crash occurred during a failed landing/recovery or liftoff/takeoff.

Sam's Axman *"accidentally" decapitated an unfortunate Capellan* Cataphract. *With its head internal structure eliminated, the* Cataphract *is considered destroyed for the rest of this battle. However, the 'Mech can be returned to service with the aid of a Technical Team (and a lot of spare parts) after the dust has settled.*

Chris' Marik Militia MR-V2 Cerberus *has the misfortune to suffer a critical hit to its machine gun ammunition. The 100 rounds of ammunition detonate and 200 points of damage are applied to the center torso internal structure—which is enough to eliminate that location. Once it finishes raining small bits of* Cerberus*, Chris notes that the 'Mech has been truly destroyed while cursing both the loss of a unit and the chance of salvaging anything once the battle is over.*

MOSTLY DEAD VS. TRULY DEAD

While 31st century weapons can be devastating, it is uncommon for entire infantry formations to be wiped out to the last man.

Conventional Infantry: Conventional infantry can be eliminated as an effective force, but many members of a unit may in fact survive as wounded. If the controlling player of the conventional infantry unit controls the battlefield at the end of the scenario, he makes a Wounded Check by rolling 2D6 for each member of the unit marked off as killed. On a result of 7 or higher, that trooper is wounded rather than dead.

A –2 modifier is applied to the target number of 7 if the conventional infantry unit was "killed" by relatively non-lethal weapons such as Tear Gas SRMs (see p. 372, *TO*), Water ammo (see p. 362, *TO*) or Conventional Infantry Weapons with a Special Feature of "N" noted on their appropriate *TechManual* Damage listing (see pp. 349-352, *TM*).

With appropriate medical treatment the trooper can be returned to the fight (see *Medical Care*, p. 187).

Battle Armor: Troops wearing battle armor (including power armor and exoskeletons) are considered killed when all their armor and the additional point representing the trooper are eliminated. However, individual troopers may survive as wounded. The controlling player makes a check for each "killed" trooper just as for conventional infantry. Clan battle armor (but not PA(L)/exoskeletons) receives an additional –2 modifier to the normal target number thanks to the advanced medical systems built into them.

Battle armor units that are destroyed because they were forced into water will extricate themselves from their watery predicament at the end of the battle with the same damage and casualty levels as they had when they were destroyed.

Even if the trooper is killed, the suit can be salvaged on a 2D6 roll of 10+. If it can be repaired and somebody can be found to wear it, the suit can be pressed back into service (see *Medical Care*, p. 187).

Technical and Medical Teams: These teams are treated like conventional infantry when players need to determine the status of killed individuals.

Paramedics: Any unit equipped with Paramedic Equipment (see p. 233, *TM*)—and with an accompanying crew/individual that is still alive—can attend 10 individuals and applies an additional –1 TN modifier to Wounded Checks for those individuals. Paramedic infantry work in the same fashion (see p. 340, *TO*).

Skill Improvement: If a Medical Team rolls a 7 or better for 20 or more individuals, award 1 Experience Point, beyond any other Experience Points awarded during a scenario; a Medical Team may only be awarded 1 such extra Experience Point per Maintenance/Repair Cycle (see *Experience*, p. 187).

Sam's Davion Guards rifle platoon has taken eight casualties in the last battle. Rolling a Wounded Check for each of the fallen, Sam gets 9, 6, 5, 4, 5, 7, 7 and 5. This means three of the lost troopers are merely wounded rather than dead.

Though emerging triumphant from a Trial of Possession against the Diamond Sharks, Douglas' Point of Clan Hell's Horses Elementals lost two troopers in the fighting. Because their battle armor is equipped with advanced medical systems and HarJel, the Target Number for the two lost troopers is reduced to 5+. Rolling 6 and 10 on his Wounded Checks, Douglas finds that both of his brave Elementals are only wounded.

DIAGNOSIS

Before repairing a damaged unit, the Technical Team must determine the status of its components. In certain cases, components may be too badly damaged to return to functional status and must be replaced.

'Mechs

Specific damage to a 'Mech is treated as follows.

Armor: Armor that has been crossed out cannot be repaired. It must be replaced.

Arm: An arm that has been blown off by a "Limb Blown Off" result on the Determining Critical Hits Table can be reattached if it is recovered from the field of battle (see *Salvage*, p. 191). It suffers no additional damage from being blown off, even if it is picked up and used as a club. If players are tracking the quality of individual components, then everything in the arm is reduced to the next Quality Rating (if the limb has been picked up and used as a club in a successful physical attack, reduce the Quality Rating of all components in the arm by two levels).

Shoulder: The shoulder actuator is an integral part of the limb structure. If it is damaged, the entire arm's internal structure must be replaced. Surviving components from the damaged arm such as weapons and other actuators can be reused.

Head: If the head has been destroyed via a "Limb Blown Off" result on the Determining Critical Hits Table, it can be reattached. If players are tracking the quality of individual components, everything in the head will drop to the next Quality Rating.

Hip: The hip actuator is an integral part of the limb structure. If it is damaged, the entire leg's internal structure must be replaced. Surviving components from the damaged leg such as weapons and other actuators can be reused.

Internal Structure: Damage to internal structure can be repaired, unless a location's entire internal structure is destroyed. In this case, the entire location must be replaced. If all of the center torso's internal structure is damaged, the 'Mech has been truly destroyed and cannot be repaired.

Leg: A leg that has been destroyed by a "Limb Blown Off" result on the Determining Critical Hits Table can be reattached if it is recovered from the field of battle (see *Salvage*, p. 191). It suffers

no additional damage from being blown off, even if it is picked up and used as a club. If players are tracking the quality of individual components, everything in the leg will drop to the next Quality Rating (if the limb has been picked up and used as a club in a successful physical attack, reduce the Quality Rating of all components in the arm by two levels).

Limb/Section: When the left or right torso is destroyed, the arm (or foreleg in the case of four-legged 'Mechs) is automatically blown off. Any 'Mech limb or body section that is destroyed (or blown off and unable to be reattached) can be replaced. The replacement need not come from the same model 'Mech, but it must come from a 'Mech of the same tonnage. The type of internal structure and myomer must also match.

Engine: An engine that has suffered a critical hit to every location or has exploded (see *Engine Explosion*, p. 77, *TO*) is considered truly destroyed and must be replaced.

MechWarrior Hits: Medical Teams can heal the wounds suffered by a MechWarrior provided the MechWarrior is not killed by receiving a total of 6 pilot hits, a cockpit critical hit or destruction of the location where the cockpit is situated.

Weapons and Other Equipment: Any weapons or equipment are rendered inoperative by a critical hit or destruction of the location in which they are situated and may be beyond repair. Players can attempt to repair weapons and equipment that have received a critical hit or are in a destroyed location (if a weapon received a critical hit and is also in a destroyed location, only a single roll is made). For each destroyed item, roll 2D6. On a result of 10 or more, the item can be repaired; otherwise, it must be replaced.

ProtoMechs

Specific damage to a ProtoMech is treated as follows.

Armor: Armor that has been crossed out cannot be repaired. It must be replaced.

Limb: Any ProtoMech limb or body section that is destroyed can be replaced. The replacement need not come from the same model ProtoMech, but it must come from a ProtoMech of the same tonnage.

ProtoMech Pilot Hits: Medical Teams can heal the wounds suffered by a ProtoMech pilot provided the pilot did not receive a total of 6 pilot hits, the ProtoMech has not suffered its third torso critical hit, or has not had its torso internal structure destroyed.

Weapons and Other Equipment: Any weapons or equipment rendered inoperative may be damaged beyond repair. For each destroyed item, roll 2D6. On a result of 10 or more, the item can be repaired; otherwise, it must be replaced.

Vehicles

Specific damage to a vehicle (including Large Naval Vessel Support Vehicles and Mobile Structures) is treated as follows. Fixed-Wing and Airship Support Vehicles are treated as aerospace units.

Armor: Armor that has been crossed out cannot be repaired. It must be replaced.

Crew Hits: Crew hits can be recovered through the ministrations of a Medical Team. If a vehicle suffers a Crew Killed critical hit, the crew survives in a wounded state on a Wounded Check against a Target Number of 7. Over time medical teams can return wounded vehicle crews to duty (see *Medical Care*, p. 187).

Hit Location: Only turrets and rotors can be replaced. If any other section is destroyed, the vehicle cannot be repaired.

Weapons and Other Equipment: Any weapons or equipment rendered inoperative may be damaged beyond repair. For each destroyed item, roll 2D6. On a result of 10 or more, the item can be repaired; otherwise, it must be replaced.

Infantry

Specific damage to an infantry unit is treated as follows.

Armor: Armor that has been crossed out cannot be repaired. It must be replaced by Technical Teams.

Casualties: Over time, Medical Teams can return wounded troopers to duty (see *Medical Care*, p. 187).

Aerospace Units

Specific damage to an aerospace unit (including Satellites, Fixed-Wing and Airship Support Vehicles) is treated as follows.

Armor: Armor that has been crossed out cannot be repaired. It must be replaced.

Crew Hits: Crew hits can be recovered through the efforts of the craft's medical personnel (who are considered to be part of the standard crew; see *Medical Care*, p. 187.)

Pilot Hits: Medical Teams can heal the wounds suffered by a Pilot provided the Pilot is not killed by receiving a total of 6 pilot hits, or a cockpit critical hit.

Structural Integrity: Only a quarter of any unit's SI may be repaired, the rest must be replaced.

Engine: If the aft hit location of an aerospace unit is destroyed or it suffers 6 engine critical hits, the engine is considered destroyed and must be replaced.

Weapons and Other Equipment: Any weapons or equipment rendered inoperative may be damaged beyond repair. For each destroyed item, roll 2D6. On a result of 10 or more, the item can be repaired; otherwise, it must be replaced.

Special Cases

The following rules cover a number of special situations.

'Mech Hull Breach: Locations that suffer hull breaches during underwater operations (see p. 121, *TW*) or while operating in a vacuum (see p. 54, *TO*) are inoperable for the duration of the scenario. After the battle, the location can be repaired or rewired and the seals replaced. This process requires no dice roll, only the time listed on the Master Repair Table (see p. 183). Once this time is spent, the components in the damaged location work normally. Other damage suffered by that location prior to and after the breach must be repaired normally.

A 'Mech that has suffered a hull breach will drop to the next Quality Rating. If players are tracking the quality of individual components, everything in the breached location is reduced to the next Quality Rating.

Other Unit Hull Breach: Other units that suffer a hull breach can be repaired in a manner similar to 'Mechs, though the time required is different. A unit that has suffered a hull breach is reduced to the next Quality Rating.

Reorganization (Optional): Infantry formations can be reorganized between games to bring individual platoons (or squads) up to full strength again. Units must be of the same type and carry the same equipment. Battle armor with configurable weapon mounts can be reconfigured if the weapons

needed are available. When units with different skill ratings are combined, the skill rating of the new unit equals that of the least skilled one.

A unit cannot be reorganized into a formation that exceeds the standard unit sizes used by its faction (see Recommended Battle Armor Formations Table, p. 172, *TM*).

Three Points of Goliath Scorpion Elementals—one armed with small lasers, the others with flamers—have suffered losses in the previous battle. The Point armed with lasers has been reduced to two active members, while the Points armed with flamers have been reduced to two and one active members. The flamer-armed Elementals can be combined into a single Point with three active members, but the laser-armed suits will have to be refitted with flamers before they can be used to bring this new Point up to full strength.

OBTAINING REPLACEMENT PARTS

Unless all players agree before the start of play, their battle forces start the campaign without a stock of replacement parts. When performing repairs, players have to check to see if replacement parts are available before they can be installed. Any technical team assigned to a unit must make an Availability Check using the crew's skill as a target number, modified by the Availability Rating of the item they are attempting to source. Each attempt to locate a specific part can be made only once during each Maintenance/Repair Cycle. Players should therefore declare all the components they are seeking before making an Availability Check for each one. For speed, armor availability is checked for in 5-ton blocks (or part thereof).

The MoS determines whether a replacement has been found, and its actual condition (see the Replacement Part MoS Table, at right). Unless players are tracking the quality of individual components, any item they source will have no effect on the overall Quality Rating of the unit; otherwise, the Quality Rating shown for the MoS is used. Units mounting salvage-quality equipment must replace such gear in order for it to function normally.

A player does not have to accept any of the replacement parts indicated by the result of the Availability Check. However, no additional Availability Checks can be made until the next Maintenance/Repair Cycle. Teams can make multiple Availability Checks during the Maintenance/Repair Cycle, but each check can be made only once (i.e. once a team has made the check, no other team can attempt to source the same replacement part for a specific unit).

Jane's CLNT-2-3T Clint *has suffered 28 points of armor damage and its right arm has been destroyed. Jane's parts shopping list therefore consists of: one right arm internal structure (Availability D), one Autocannon 5 (Availability D), one lower arm actuator (Availability C), one upper arm actuator (Availability C) and 28 points of armor (Availability C). The shoulder actuator is included as part of the replacement arm internal structure and is not sourced separately.*

Jane still has to depend on a Regular Vehicle Technical Team, and so all Skill Checks will be made using 3D6, with the highest die being discarded. The modified Target Number to find the arm internal structure is 6 [7 (Regular Skill Rating) – 1 (Availability D) = 6]. Jane's roll is 9, which succeeds with a comfortable margin. Unfortunately, she only rolls a 5 for the autocannon (which had a modified Target Number of 6), indicating that only a salvage-quality replacement is available. The actuators and armor each have a Target Number of 5. Jane gets the lower arm actuator and the armor with rolls of 8 and 6, but a roll of 2 means the upper arm actuator has eluded her.

Jane now has to decide whether to use the salvage-quality autocannon and repair what she can or wait until the next Maintenance/Repair Cycle to try to get the parts she is still missing.

Sam's AXM-1N Axman *has survived its latest battle, but the BattleMech still has a bad gyro and its Sutel Precision Line Large Pulse Laser has been completely destroyed.*

Sam's Regular Technical Team has a Base Target Number of 7. The gyro has an Availability Rating of C (–2), giving a modified Target Number of 5 [7 (Regular Skill Rating) – 2 (Availability Rating C) = 5]. Rolling only a 3, Sam curses his luck at only being able to find a salvage-quality replacement with a Quality Rating of A. Rejecting this replacement gyro, he must hope that he can repair the gyro he has.

Looking for a replacement for the pulse laser (Availability Rating D, –1 modifier), Sam's modified Target Number is 6 [7

EQUIPMENT AVAILABILITY MODIFIER TABLE

Availability Rating	Modifier
A	–4
B	–3
C	–2
D	–1
E	+0
F	+2
X*	+5

*Equipment is experimental or "extinct" ("lost" from availability in the era being played)

REPLACEMENT PART MOS TABLE

Margin of Success	Quality Rating	Result
5 or more	F	Component available
4	E	Component available
3	E	Component available
2	D	Component available
1	D	Component available
0	C	Component available
–1	B	Salvage quality*
–2	A	Salvage quality*
–3 or lower	N/A	No part available

*See Salvage Quality Equipment Table, p. 192.

FACTION AVAILABILITY MODIFIERS TABLE

Source Location	Current Location														
	CC	CS	Clan	DC	FS	FRR	FWL	LC	TH	WoB	OA	TC	MC	RWR	Other
CC	+0	+3	+3	+2	+1	+3	+1	+2	+1	+2	+3	+1	+1	+3	+3
CS	+0	+0	+2	+2	+2	+1	+3	+1	—	+2	+2	+3	+3	—	+3
Clan	+3	+2	+0	+2	+2	+2	+3	+2	—	+2	+2	+3	+3	—	+3
DC	+2	+2	+2	+0	+1	+1	+2	+1	+1	+2	+1	+3	+3	+2	+3
FS	+1	+2	+2	+1	+0	+3	+2	+1	+1	+2	+1	+1	+2	+3	+3
FRR	+3	+0	+2	+1	+3	+0	+2	+1	—	+2	+3	+4	+4	—	+3
FWL	+1	+3	+3	+2	+2	+2	+0	+1	+1	+2	+2	+2	+1	+2	+3
LC	+2	+1	+2	+1	+1	+1	+1	+0	+1	+2	+2	+2	+2	+1	+3
TH	+1	—	—	+1	+1	—	+1	+1	+0	—	+2	+2	+2	+2	+3
WoB	+2	+2	+2	+2	+2	+2	+2	+2	—	+0	+2	+2	+2	—	+3
OA	+3	+2	+2	+1	+1	+3	+2	+2	+2	+2	+0	+1	+2	+3	+3
TC	+1	+3	+3	+3	+1	+4	+2	+2	+2	+2	+1	+0	+1	+3	+3
MC	+1	+3	+3	+3	+2	+4	+1	+2	+2	+2	+2	+1	+0	+3	+3
RWR	+3	—	—	+2	+3	—	+2	+1	+2	—	+3	+3	+3	+0	+3
Other	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+0

Key: **CC**: Capellan Confederation **CS**: ComStar **DC**: Draconis Combine **FS**: Federated Suns **FRR**: Free Rasalhague Republic **FWL**: Free Worlds League **OA:** Outworld Alliance **TC:** Taurian Concordat **LC**: Lyran Commonwealth (Lyran Alliance) **TH**: Terran Hegemony **MC**: Magistracy of Canopus **RWR**: Rim Worlds Republic **WoB**: Word of Blake

(Regular Skill Rating) – 1 (Availability Rating D) = 6]. A roll of 5 secures a salvage-quality weapon with a Quality Rating of B, but on consulting the Salvage Quality Equipment Table and rolling a 1D6 result of 4, Sam notes that this weapon only inflicts 8 points of damage instead of 9.

Fabrication

Even if a suitable part cannot be sourced then it may be possible to fabricate a replacement from scratch. Only one Tech team can work on fabricating a component at a time, and their skill check TN receives an additional +2 modifier. The time and cost required is equal to ten times that of replacing the part and without the use of a factory-grade installation is limited to components with a base Tech level A, B, or C.

The time required can be spread over multiple Maintenance/Repair Cycles, but the skill check is made only at the end of the designated time. If the attempt fails then the time and effort is wasted, but another attempt to fabricate a part can be made. If the individual Quality Ratings are being tracked, the MoS from the Replacement Part MoS Table will indicate the quality rating of the component. Otherwise assume the quality rating matches that of the unit in which the fabricated component is being installed.

The purchase price of a fabricated part is half that of a new component.

With her CLNT-2-3T Clint *in desperate need of a new life support system, Jane has elected to have one of her tech teams fabricate a replacement while they are in transit aboard the command's DropShip. Normally it would take 180 minutes to replace a 'Mech's life support system, so fabrication will take 1,800 minutes, or 30 hours. Therefore it will take a tech team four maintenance periods to complete the fabrication.*

With a Regular Skill Rating, the TN for the attempt is 9 [7 (Regular Skill Rating) +2 (Fabricating) +0 (Tech Level C) +0 (Transport Bay) = 9]. They are just successful with a roll of 9, and the Clint*'s new life support unit has a Quality Rating of C.*

FUEL AVAILABILITY & COST TABLE

Fuel Type	Cost (per ton)	Availability
Natural Gas	1,200	A
Petrochemicals	1,000	A
Hydrogen	15,000	C*
Alcohol	1,500	A

*Hydrogen can be produced for no cost using fusion, fission or solar power plants.

Fuel (Optional)

If fuel consumption is being tracked (see *Refueling*, 34), players can find the Availability Ratings for different types of fuel and their cost on the Fuel Availability and Cost Table (see above). For speed of play, fuel is checked for in 5-ton blocks. Hydrogen fuel can be produced by any unit with a fission, fusion or solar power plant at no cost if it is not undergoing repair or modification, at a rate of 10 tons per Maintenance/Repair Cycle unless local conditions (such as lack of water) eliminate this option.

Regional Variation (Optional)

For extra flavor, players may want to include regional variation modifiers. Acquiring the parts for equipment manufactured on the other side of the Inner Sphere can be a difficult process. Players wishing to add this complication to their games can use the Faction Availability Modifiers Table (see p. 179) to determine the appropriate TN modifier by cross-referencing the current location/faction with the location/faction from which the unit they are repairing originated. Because of their modular design, OmniMechs, OmniFighters and OmniVehicles can use components built for another Omni with no penalty.

When determining locations, players are directed to the information contained in the various Technical Readouts, the Handbook series or the Force Faction Tables available for free at www.classicbattletech.com.

Orville needs a new engine for a Slayer *aerospace fighter. Currently, his mercenary company is engaged in a campaign in the Magistracy of Canopus. Using this as his Current Location and cross-referencing it with the Draconis Combine (the location of the nearest* Slayer *production line), he finds that he has to contend with a +3 target number modifier.*

Orville fails the Availability Check and swears that next time he buys a new fighter, he's going to buy Free Worlds League.

STOCKPILES, BUYING AND SELLING (OPTIONAL)

Players may want to exercise the option to create stockpiles of spares, and to buy and sell components and ammunition during a campaign. Each side starts with the same C-bill allowance for parts and ammunition. (For a ballpark figure, start at 100,000 C-bills per 'Mech, ProtoMech Point, vehicle or aerospace unit, multiplied by the expected number of games in the campaign.) For simplicity, these rules do not cover the details of wages, operating expenses or mercenary contracts. Rules governing those aspects of campaigns in the *BattleTech* universe are found in *Interstellar Operations.*

Before play begins, each side can spend up to half this allowance on any ammunition and spares with an Availability Rating of A thru D. During the game, players can use the rules in *Obtaining Replacement Parts* (see p. 178) to source additional war materiel.

The cost of weapons and equipment begins on page 147 of *Tactical Operations,* and in the *Cost* section of *TechManual*, beginning on page 274. Any item on the list with a price formula that includes tonnage must be bought for a particular-tonnage unit. For example, a hand actuator for an 80-ton 'Mech costs 640 C-bills and can only be mounted on an 80-ton 'Mech.

The Quality Rating of all ammunition and components is D, or as indicated on the Faction Quality Table (see p. 167) for the appropriate era and faction. If players are tracking the Quality Rating of individual components, the cost should be modified using the value from the Cost Modifier column on the Quality Rating Table (see p. 167).

Buying

The following entries describe some special component cost rules.

Engines: Because engine costs are based on the tonnage of the unit and its engine rating (as well as a pre-determined number and type of heat sinks included), engines must be matched to the unit's tonnage and Walking MP (and heat sink type, for heat sinks outside the engine). For this reason, quartermasters rarely stock replacement engines.

Jump Jets: Jump jet repairs actually consist of replacing critically damaged exhaust ports. The cost of each exhaust port (critical slot) equals the tonnage of the unit multiplied by 200. The extra cost shown on the Cost Table represents the additional cost for installing an entire jump jet system on a unit.

Heat Sinks (Outside Engine): Spare heat sinks cost 2,000 C-bills each. Spare double heat sinks cost 6,000 C-bills each.

Limb/Head/Body Section: The cost of replacing a limb, head or body section is equal to 10 percent of the total cost of the 'Mech's combined skeleton and musculature. To calculate the cost of a replacement limb/head/body section, divide the 'Mech's total skeleton/musculature cost by 10.

All limb/head/body section costs include all internal structure in the section. However, actuators, armor, weapons and other equipment in the location must be purchased and installed separately. For example, a replacement leg for an 80-ton 'Mech with standard myomer and structure costs 19,200 C-bills (80 x 2,400) ÷ 10 = 19,200). However, the replacement leg is empty and needs leg actuators for an additional cost of 28,000 C-bills.

The base cost for replacing a 'Mech head does not include the cost of the head's cockpit, sensors and life-support system. However, replacement heads always contain these items, so the additional costs must be paid when buying a head.

As previously noted, 'Mech center torsos cannot be replaced.

Vehicles: The costs of replacement vehicle turrets and rotors are listed on page 279 of *TechManual*. Other vehicle sections cannot be replaced.

Structural Integrity: Structural Integrity is replaced by unit type as follows: aerospace fighter, conventional fighter, DropShip/Small Craft, WarShip/JumpShip/Space Station. Multiply the amount of SI being purchased by the appropriate Cost to find the replacement SI's cost. Additionally, the mass of the SI is equal to what ever unit it is purchase for (or salvaged from) and goes into a general "tonnage pool" for making repairs/replacements. For example there's 136 tons of SI in the tonnage pool. To repair the SI of a 20,000 spheroid DropShip (where each SI weighs 40 tons), only 2 SI (80 tons) can be repaired, leaving 36 tons of SI in the tonnage pool.

Omnis: Equipment and ammunition to be installed on an OmniMech, OmniFighter or OmniVehicle receives an additional cost multiplier of 1.25. Weapons and equipment have been specially adapted and cannot be used on non-Omni units, but ammunition can be loaded into a non-Omni unit.

Selling

In order to generate more C-bills with which to buy ammunition and components, players can sell off unwanted items and even whole vehicles. The sale price will always be half of the buying price of individual equipment items or an undamaged unit. A damaged unit sells for a third of the usual buying price. A destroyed unit sells for one-tenth of the buying price. Totally destroyed units cannot be sold.

Negotiations (Optional)

The price to purchase or sell any equipment, especially in a war-torn economy, can always be negotiated. While more detailed and skill-oriented rules for such negotiations are found in *Interstellar Operations*, players can insert a bit of skill and luck to try to modify the purchasing/selling price of any item using the following rules.

The Base Target Number is 10. This number is modified by the Equipment Rating of the item in question, as well as –1 if the player has a Veteran Technical Team, or –2 if the player has an Elite Technical Team. For each successful Negotiation Check die roll,

the purchase price is reduced by 10 percent, while the selling price is increased by 10 percent (round down in all instances).

A player can make a total of three Negotiation Check dice rolls in an attempt to affect the price, but each subsequent roll applies a +1 cumulative modifier. However, a failed roll automatically applies a positive or negative percent (depending on whether the player is attempting to purchase or sell an item) equal to what current price the player is attempting to achieve. For example, a player has rolled successfully twice and has reduced the purchase price of an item by 20 percent. He's feeling lucky and is pushing for a 30 percent price reduction. He applies the +3 modifier and rolls again, but fails. A 30 percent increase is automatically applied to the current negotiated price, meaning the player will pay a 10 percent increase from the original base price and cannot roll again.

OBTAINING REPLACEMENT PERSONNEL (OPTIONAL)

A player can attempt to recruit additional personnel. During the Maintenance/Repair Cycle, he or she can roll 2D6 once and consult the New Personnel Availability Table (see below) to determine the type of personnel available. Next, the player should roll on the Random Experience Rating Table (see p. 273, *TW*) to determine the skill rating of the new recruits. Combat units then use the Random Skills Table (see p. 273, *TW*) to determine the new personnel's skill ratings. Technical and Medical teams use the values provided by the Support Personnel Experience Table (see p. 187).

The new personnel have no equipment of their own. For infantry, the full cost of the appropriate unit type must be spent to outfit them. Other personnel types can use what equipment is on hand or can be bought for them. If the player chooses not to retain the services of the generated personnel, he or she must roll again in the next Maintenance/Repair Cycle.

NEW PERSONNEL AVAILABILITY TABLE

Roll (2D6)	Personnel Available
2	Medical Team
3	Aerospace Pilot/ProtoMech Pilot (Clan only)
4	MechWarrior
5	Vehicle Crew
6	Conventional Infantry
7	No Personnel Available
8	Conventional Infantry
9	Vehicle Crew
10	MechWarrior
11	Technical Team
12	DropShip/Small Craft Crew

REPAIRS AND REPLACEMENTS

After obtaining the necessary parts, players can perform repairs, replacements or partial repairs. The following rules describe the process of making such repairs.

All repairs require Technician Skill Checks. When performing repairs and replacements, the conditions under which they are performed will modify the target number, as shown on the Maintenance, Repair and Salvage Check Modifiers Table (see p. 170).

Repair

The term repair means returning a component to working order without replacing it entirely. This requires a skilled technician and a stock of tools and miscellaneous parts, but does not require specific replacement parts. Repairs are cheaper than replacements, but are more difficult to accomplish and less reliable.

To repair a part, a Technical Team spends the time listed on the Master Repair Table (see p. 183) and then makes a Technician Skill Check, modified as indicated on the Master Repair Table and the Maintenance, Repair and Salvage Check Modifiers Table. If the roll succeeds, the repair succeeds. If the roll fails, the component is still damaged. (However, certain components may be partially repaired on a failed Repair Check; see *Partial Repairs*, p. 182.) A Technical Team may not attempt to repair the same part twice, nor may another team of the same or lower Experience Rating attempt the job. Only a Technical Team with a higher Experience Rating may attempt to repair the part after a failed attempt. If an Elite Technical Team fails to make the repair, it is impossible and the part must be replaced.

Some equipment (such as Artemis IV FCS, machine-gun arrays or an actuator enhancement system) modify the behavior of other components. However, they must be repaired separately.

> *Bob's AS7-D* Atlas *has taken a beating fighting the Jade Falcons as they drive into the Lyran Alliance. It has suffered armor damage to every hit location and 7 points of internal structure damage to the left torso. In addition, the LRM-20 launcher has taken two critical hits (but passed the Diagnosis Check and can be repaired). The Veteran Technical Team has a Target Number of 6, while the* Atlas *has a Quality Rating of D (+0) and is being repaired in a 'Mech cubicle aboard a DropShip (+0).*
>
> *The armor cannot be repaired, only replaced. However, Bob can attempt to repair the LRM launcher and internal structure. The LRM launcher has a Tech Rating of C (+0) and has suffered two critical hits (–2). That gives a final modified Target Number of 4 [6 (Veteran Skill Rating) + 0 ('Mech cubicle aboard a DropShip) + 0 (Quality Rating D) + 0 (Tech Rating C) – 2 (2 critical hits) = 4]. Bob rolls an 8, indicating that the LRM launcher is fully operational again after 150 minutes of work.*

Replacement

A Technical Team may not attempt to replace the same part twice, nor may another team of the same or lower Experience Rating attempt the job. Only a Technical Team with a higher Experience Rating may attempt to replace the part after a failed attempt. If an Elite team fails to install a part, the replacement part is destroyed during the installation attempt, but a new part may be obtained and installed. For this reason, most Technical Teams choose to be especially careful and spend extra time (see *Extra Time*, p. 182) when installing expensive new parts.

Some equipment (such as Artemis IV FCS, machine-gun arrays or an actuator enhancement system) modify the behavior of other components. However, they must be replaced separately.

A Veteran Technical Team (Target Number 6) is working in a 'Mech cubicle (+0) on an Atlas *with a Quality Rating of D (+0) to replace its standard Tech Rating D armor (+1). The Master Repair Table gives this activity a –2 TN modifier. The modified Replacement Check Target Number is 5 [6 (Veteran Skill Rating) + 0 ('Mech cubicle) + 0 (Quality Rating D) + 1 (Tech Rating D) – 2 (Master Repair Table modifier) = 5]. Bob decided he does not want to take any chances and elects to have his technicians spend extra time, doubling the time required (30 minutes per armor point in this case) and receiving an additional –1 modifier. Now with a final modified Target Number of 4, Bob checks each of the 11 damaged hit locations (front and rear torso locations are treated separately).*

Unfortunately, Bob's best efforts were not enough. Rolling 7, 3, 7, 12, 3, 6, 7, 5, 4, 5 and 8, Bob fails the Replacement Check on the Atlas' *right arm and left torso. Unless he can assign an Elite Technical Team to the project, the* Atlas *will have to continue without these locations repaired until the next Maintenance/ Repair Cycle. The armor points used in the failed attempt are lost.*

Partial Repairs

Depending on the part being repaired or replaced, a failed Technician Check may result in a component being partially repaired or incorrectly installed. Any component with a Partial Repair value listed on the Master Repair Table (see p. 183) may be partially repaired or incorrectly installed in this manner. The value is the highest amount by which the roll may fail and cause a partial repair or faulty installation. For example, if the Target Number is 8 and the player rolls a 6, the roll failed by 2. A component that is partially repaired or incorrectly installed will produce the effects listed in the Partial Repair Effect column on the table and (if players are tracking components individually) will reduce the Quality Rating of the component by one level. In all other respects, the component functions normally. A Technical Team performing the repair/replacement will think they did a complete job, so at least one game must pass before the partial repair can be corrected. At that point, a Technical Team with a higher Experience Rating may attempt to correct the partial repair. If the partial repair was made by an Elite team, the effects are permanent and remain even if the part is salvaged and properly installed in a different unit.

Heat sinks that are partially repaired work at only half capacity (round to the nearest whole number, .5 rounds up). For example, a unit with three partially repaired single heat sinks would lose 1 point of its heat-dissipation capability.

With 7 points of internal structure damage, the left torso of Bob's Atlas *has lost between a quarter and half of its total points (+0). It has standard internal structure with Tech Rating D (+1). The Modified Repair Check Target Number is 7 [6 (Veteran Skill Rating) + 0 ('Mech cubicle) + 0 (Quality Rating D) + 0 (Master Repair Table Modifier) + 1 (Tech Rating D) = 7]. However, Bob rolls only a 6. Consulting the Master Repair Table, he sees that this result constitutes a Partial Repair. In this case, the left torso internal structure points are permanently reduced by 2. This result can only be reversed by replacing the entire left torso. Until then, the maximum armor that the left torso can support is reduced by 4.*

Special Rules

The following rules cover special situations:

Clan/Inner Sphere Incompatibility: For any attempt to use a Clan component to replace an Inner Sphere one (or vice versa), add an additional +4 modifier to reflect the basic incompatibility of the two technologies. Inner Sphere and Clan OmniPods are the exception to this rule. Equipment adapted for pod use can be interchanged with no penalty between Inner Sphere and Clan Omni units (as well as between different classes of Omni units, such as an OmniMech and an OmniVehicle).

OmniPods: Weapons and equipment used in OmniPods are easier to install but can only be used on OmniMechs, OmniFighters or OmniVehicles. However, the ammunition in a pod can be removed and loaded into a non-Omni unit. Weapons and equipment can be stripped out of an OmniPod so that they can be installed as fixed items, but such a move eliminates the ability to install such items as OmniPods in the future (see *Customization*, *Omni Units* p. 189**)**.

Extra Time: To increase the potential for a successful repair/ replacement, a player may spend extra time on a repair or replacement job.

If twice the required repair time is spent on a job, the Technician Skill Check receives a –1 modifier to the target number. The repair time may be doubled multiple times (to a maximum of 4 times the standard time), but a result of 2 on the dice roll is always a failure, regardless of how low the target number is reduced by taking extra time.

Extra time cannot be combined with rush jobs (below).

Rush Jobs: Sometimes conditions (or force commanders) require a quick turnaround on repairs. Rush jobs are more difficult than standard repairs, and are more likely to break down at the worst possible moment.

Any Technical Team with a Regular or higher Experience Rating may perform a rush job. To do so, they must voluntarily lower their effective Experience Rating for the duration of the rush job. By reducing its Experience Rating by one, a Technical Team can make a repair in half the usual time; a two-rating experience reduction enables them to make the repair in one-fourth the usual time; and a three-rating experience reduction enables them to make the repair in one-eighth the usual time. If necessary, round up in all cases.

A Technical Team performing a rush job doesn't have time to test the repair or installation before sending the unit to the field. To reflect this, the controlling player does not make the Technician Skill Check at the time of the job. Instead, the roll is made during the next game in which the unit participates, the first time the component is used. Immediately apply the results of a failed check, partial repair or incorrect installation.

Players should also apply an additional +1 modifier to any subsequent attempt to repair, replace or salvage an item that has been repaired or replaced with a rush job.

Rush jobs cannot be combined with extra time.

ProtoMechs: Weapons and other Equipment mounted on a ProtoMech may only be repaired if there is at least 1 point of internal structure in the damaged item's location. Otherwise, such components need to be replaced.

Infantry: Conventional infantry cannot be repaired, but instead requires the services of a medical team. Battle armor can have their armor repaired by a technical team in the same manner as a 'Mech, vehicle, or aerospace unit, but the final block representing the trooper again requires the services of a medical team (see *Medical Care*, p. 187).

MASTER REPAIR TABLE

Damage	Skill Modifier*	Partial Repair**	Partial Repair Effect	Time (in minutes)‡††
Replacements				
'Mech				
Destroyed Location	+3	—	—	240
Reattach/Replace Blown-Off Limb	+1	—	—	180
Replace Blown-Off Head	+2	—	—	200
Actuator	–3	—	—	90
Armor (per location)§§	–2	—	—	5 per circle
Ammunition Critical	–2	1	Can only carry half standard quantity of ammo (round down)	120
CASE/CASE II	–1	—	—	60
Engine	–1	1	+1 Heat Point/turn	360
Gyro	0	2	+1 Piloting modifier	200
Heat Sink	–2	—	—	90
Jump Jet	0	—	—	60
Life Support	–1	—	—	180
Sensors	0	—	—	260
Turret	–1	—	—	160
Weapons and Other Equipment	0	—	—	120
OmniMech Pod (per location)	–2	1	Double repair time	30†
ProtoMech				
Destroyed Location	+3	—	—	240
Armor (per location)§§	–2	—	—	5 per circle
Other Critical Hits				
1st Hit	0	—	—	120
2nd Hit	+1	—	—	240
3rd Hit	+3	—	—	480
Weapons and Other Equipment	0	—	—	120
Vehicles				
Armor (per location)§§	–2	—	—	3 per circle
CASE/CASE II	–1	—	—	45
Jump Jet	0	—	—	60
Rotors	0	—	—	300
Sensors	0	—	—	260
Stabilizer	0	—	—	60
Turret	–1	—	—	160
Weapons and Other Equipment	0	—	—	120
Omni Vehicle Pod (per location)	0	1	Double repair time	30†
Aerospace				
Armor, Standard (per location)§§	–2	—	—	15 per circle
Armor, Capital (per location)	–2	—	—	2 hours per circle
Avionics	+1	2	+1 control modifier	80 hours
Bay Door	–1	—	—	10 hours
Cargo Bay§	–3	—	—	1 month
Transport Bay	–1	—	—	7 days per cubicle
CASE/CASE II	–1	—	—	60
CIC/FCS§	0	1	+1 to-hit modifier	72 hours
Docking Collar§	–2	—	—	48 hours

MASTER REPAIR TABLE (CONTINUED)

Damage	Skill Modifier*	Partial Repair**	Partial Repair Effect	Time (in minutes)‡††
Aerospace, continued				
Grav Deck§	+3	—	—	10 days
K-F Boom	0	—	—	60 hours
K-F Drive§	+2	—	—	2 months
Engine§	+1	—	—	3 months
Energy Storage Batteries	+2	—	—	1 month
Fuel Tank (Fighter)	–2	—	—	30 hours
Fuel Tank (Large Craft)§	0	—	—	2 days
Landing Gear§	+2	3	+1 Control Roll modifier when landing	20 hours
Lithium-Fusion Battery	+2	—	—	1 month
Heat Sink	–2	—	—	90 minutes
Life Support§	0	—	—	2 weeks
Naval C^3	+1	—	—	72 hours
Sensors	–2	1	+1 to-hit modifier	20 hours
Structural Integrity (per point)‡‡	+2	—	—	1 day/2 weeks
Thruster	–2	—	—	10 hours
Weapons	–2	1	+1 to-hit modifier	30 hours
OmniFighter Pod (per location)	–2	1	Double repair time	30†
Battle Armor				
Modular Weapon (per mount)	–2	1	Double repair time	30†
Armor (per location)	–2	—	—	5 per circle
Repairs				
'Mech				
Internal Structure (per location)				
Up to 1/4 damage	–1	1	1 pt permanent damage	90
Up to 1/2 damage	0	1	2 pts permanent damage	135
Up to 3/4 damage	+1	2	3 pts permanent damage	180
More than 3/4 damage	+2	2	4 pts permanent damage	270
Engine				
1 critical hit	–1	2	+3 Heat Points/turn	100
2 critical hits	0	3	+5 Heat Points/turn	200
3 critical hits	+2	4	+8 Heat Points/turn	300
Sensors				
1 critical hit	0	3	+1 to-hit modifier	75
2 critical hits	+3	4	+2 to-hit modifier	150
Gyro				
1 critical hit	+1	3	+1 Piloting modifier	120
2 critical hits	+4	4	+2 Piloting modifier	240
Life Support				
1 critical hit	–1	—	—	60
2 critical hits	+1	—	—	120
Miscellaneous				
Jump Jet	0	1	+1 Heat Point when jumping	90
Turret Locked	–1	—	—	80
Heat Sink	–1	3	Heat Sink works at 1/2 capacity	120
Actuators	0	—	—	120

MASTER REPAIR TABLE (CONTINUED)

Damage	Skill Modifier*	Partial Repair**	Partial Repair Effect	Time (in minutes)‡††
'Mech Miscellaneous, continued				
Hull Breach (per location)	—	—	—	60†
Weapons and Other Equipment				
1 critical hit	–3	—	—	100
2 critical hits	–2	—	—	150
3 critical hits	0	—	—	200
4+ critical hits	+2	—	—	250
ProtoMech				
Internal Structure (per location)				
Up to 1/4 damage	–1	1	1 pt permanent damage	90
Up to 1/2 damage	0	1	2 pts permanent damage	135
Up to 3/4 damage	+1	2	3 pts permanent damage	180
More than 3/4 damage	+2	2	4 pts permanent damage	270
Other Critical Hits				
1st hit	0	—	—	100
2nd hit	+1	—	—	150
3rd hit	+3	—	—	200
Weapons and Other Equipment	0	—	—	200
Vehicles				
Internal Structure (per location)	0	1	1 pt permanent damage	60
Rotor Damage (per hit)	+2	—	—	120
Stabilizer	+1	1	+1 to-hit modifier	60
Motive System Hit	–1	—	—	60
Turret locked	–1	1	Turret starts next game jammed in forward firing position	90
Aerospace				
Avionics	0	2	+1 control modifier	8 hours
Bay Door	–3	—	—	1 hour
Cargo	–3	—	—	4 hours
CIC/FCS	+1	1	+1 to-hit modifier	2 hours
Docking Collar	+3	2	+2 modifier to docking attempts	2 hours
Grav Deck	+2	—	—	24 hours
K-F Boom	–1	—	—	6 hours
K-F Drive	+5	—	—	10 days
Energy Storage Batteries	+2	—	—	5 days
Engine	+1	2	Reduce Safe Thrust by 1	5 hours
Fuel Tank (Fighter)	–4	1	Reduce Max. Fuel Points by 10 percent	3 hours
Fuel Tank (Large Craft)	+1	2	Reduce Max. Fuel Points by 10 percent	6 hours
Landing Gear	+3	3	+2 Control Roll modifier when landing	2 hours
Lithium-Fusion Battery	+2	—	—	5 days
Heat Sink	–1	—	—	90 minutes
Life Support	+1	—	—	2 hours
Naval C^3	+1	—	—	4 hours
Sensors	–1	1	+1 to-hit modifier	2 hours
Structural Integrity (per point) ‡‡	+1	—	—	5/10 hours†††
Thruster	–1	—	—	90 minutes
Weapons	–1	1	+1 to-hit modifier	3 hours

*Apply an additional +1 modifier if using salvaged parts instead of new parts. Apply an additional +1 modifier for work done under difficult conditions, and/or without proper tools.
**If the Repair Check fails by an amount equal to or less than this value, a partial repair is achieved (see *Partial Repairs*, p. 182). †This time cannot be modified by the Extra Time or Rush Job rules.
§Indicates repair only possible in a repair bay or on a planetary surface (for aerospace units that can land). §§Modular Armor can only be repaired if the critical slot is undamaged.
‡Armored Components require double the normal time to repair or replace. ‡‡Per 5 points for Large Craft; only a quarter of any unit's SI may be repaired, the rest must be replaced.
‡‡‡3 days for non-Large Craft, 2 weeks for Large Craft. ††Release of HarJel in a location doubles the normal time to repair or replace. †††5 hours for non-Large Craft; 10 hours for Large Craft.

REARMING

As part of the Maintenance/Repair Cycle between scenarios, players can replace expended munitions. No skill check is required, but the time listed on the Rearm Time Table (at right) is required to reload one ton (or part thereof) with the services of equipment typically found in a maintenance faculty: a transport cubicle or bay, or a Mobile Field Base.

Note: All of the following situations (including *In the Field*) occur outside of battle conditions; not within a scenario. Crews are using the maximum safe time and situation to rearm units. Rules governing rearming units under combat conditions (directly in a scenario) are found in the General Rules section of *Tactical Operations* (see p. 213, *TO*).

In the Field: Rearming in the field (see p. 98) is only possible if a player has a unit with the necessary cargo capacity to carry the ammunition available. The transport unit cannot have participated in combat unless it accompanied the units it is resupplying during battle. It cannot be used for search and rescue or salvage operations during the current Maintenance/Repair Cycle, nor can it undergo repair or customization.

Units carrying ammunition or other consumables as cargo can always rearm from their own reserves.

Reloading in the field doubles the time required. More than one team or crew can work to rearm a single unit, but only one team or crew can be working on a specific location at any one time.

Assistance: If an exoskeleton or IndustrialMech is on hand, it can assist in the reloading process. However, only one can be used to assist each rearming. These items cannot be used to help reload battle armor.

Tracking Ammunition Expenditure: It is not uncommon for a unit to have some ammunition left at the end of a battle, therefore only requiring a top-off for its magazines. If ammunition stockpiles are being used, players must keep track of the type and total number of rounds they have.

Swapping Ammunition: The time required to remove ammunition is the same as that to load it, and so the time to swap one type of ammunition for another is double that required to simply reload with the same kind of ammunition.

Single-Shot Weapons: One-shot weapons (including missile launchers, rocket launchers, A-Pods and B-Pods) can be reloaded in a quarter of the standard time.

Omni Units: Omni units have a major advantage when it comes to rearming, as the pods containing a magazine can simply be swapped out. This cuts the time required to rearm by half. This bonus does not include external stores on OmniFighters.

Cooling Pod: These can be recharged with coolant from a suitably equipped vehicle or in a transport cubicle. Each pod requires .1 tons of coolant.

Hand-Held Weapons: If spare hand-held weapons are available, they can be installed in half the normal time. The weapon itself is repaired and reloaded as normal.

Battle Armor: Detachable missile and weapon packs can be reloaded in half the time per suit. They can be replaced in only 1 minute, but only if spare packs are available.

Disposable Weapons: Infantry can automatically replenish any disposable weapons expended between scenarios from any unit capable of transporting them. Each transport unit (except DropShips) can service only one infantry unit in each Maintenance/Repair Cycle. DropShips can provide resupply for up to ten infantry units.

REARM TIME TABLE

Reloading Unit Type	Base Reload Time*
Technical Team	
Green	15
Regular	10
Veteran	8
Elite	6
Unit Crew	
Green	30
Regular	20
Veteran	15
Elite	10

Multipliers	
General	
In the Field	x2
One-Shot Weapon	x.25
External Stores	x.25
Exoskeleton or IndustrialMech	x.5
Omni	x.5
Environmental	
See Planetary Conditions Modifiers Table (p. 171)	Variable**
Technical Team Strength/Unit Crew Size	
7 or more	x1
6	x1.25
5	x1.5
4	x2
3	x2.5
2	x3
1	x4
Unit Crew Hits	
1	x1.25
2	x1.5
3	x2
4	x3
5	x4

*In minutes

**Translate the modifiers from the Planetary Conditions Modifiers table for use with the rearming rules as follows: a +1 modifier = x1.25; a +2 modifier = x1.5; a +4 modifiers = x2.

External Stores: Bombs, fuel tanks, TAG pods and so on are carried as external stores on fighters and some Fixed-Wing Support Vehicles. Each item is treated like a single-shot weapon, meaning it requires one-quarter of the normal time to mount or dismount them.

Capital and Sub-Capital Weapons: The ammunition for many capital weapons is weighed in tons per shot, not shots per ton. When reloading these weapons, calculate the total weight being loaded into a magazine, then round up to the next whole ton. Multiply the time required by this number to determine the total time to rearm.

A Regular Technical Team is working in a 'Mech cubicle aboard a Leopard*-class DropShip to rearm a DV-7D* Dervish *that has fired 10 rounds of LRM-10 ammunition from each magazine and 30 rounds of Streak SRM-2 ammunition from the magazine in the right torso. Each magazine will require 10 minutes to reload, meaning it will take 30 minutes to fully rearm the 'Mech. If a second team is available, they can reload the left torso LRM magazine while the first team reloads the LRM and SRM magazine in the right torso, cutting the total time required to 20 minutes.*

The Veteran crew of a Manticore Heavy Tank are rearming their vehicle in the field. As the magazines for the LRM-10, SRM-6 and Streak SRM-2 are all located in the body of the vehicle, the crew cannot be assisted by another Technical Team or any other personnel (combat or otherwise). The base time to reload each weapon is 15 minutes. Because the operation is being carried out in the field, the base time is multiplied by 2, giving 90 minutes of total time required to rearm completely.

If the crew had a powered exoskeleton such as the P-5000 Powerloader*, or even an* SC Powerman LoaderMech*, the time required could be reduced to 45 minutes.*

JURY-RIGGING (OPTIONAL)

Though replacement parts are not always readily available, any repair shop contains items such as scrap myomer, duct tape (lots of duct tape), solder and other odds and ends. With these supplies, a Technical Team can jury-rig a temporary bypass for the damaged or destroyed component until a more skilled team or the needed replacement part becomes available.

To create a jury-rigged component, a team must make a successful Technician Skill Check with the appropriate TN modifiers from the Maintenance, Repair, and Salvage Check Modifiers Table. This quick fix is neither safe or durable. If using component Quality Ratings, jury-rigging a component automatically reduces its Quality Rating to A (Salvage) and the component suffers the penalties indicated on the Salvage Quality Equipment Table (see p. 192). The time required to jury-rig a component is equal to the time it would take to completely repair it.

During a scenario, if a unit falls, skids or goes out-of-control, the controlling player must roll 2D6 after determining all the effects of the fall/skid/out-of-control movement. On a result of 7 or more, the jury-rigging fails and the component is treated as destroyed (all its critical slots are marked as destroyed). At the next Maintenance/Repair Cycle, the destroyed component must be jury-rigged again.

Only components that can be repaired can be jury-rigged.

SUPPORT PERSONNEL EXPERIENCE TABLE

Old Rating	New Rating	Complete Scenarios Required
Green	Regular	5
Regular	Veteran	10
Veteran	Elite	20

MEDICAL CARE

Each Medical Team can attend to a total of 25 individuals or the needs of the crew (JumpShip, WarShip, Space Station or Large Naval Vessel Support Vehicle) to which they are attached between each battle. For each patient (or crew), the medical team rolls 2D6 against a target number based on the team's Skill Rating and the conditions under which they are operating. Only one such roll can be made for each individual (or crew) per Maintenance/Repair Cycle.

Each success returns one trooper to health, heals one hit suffered by a pilot, MechWarrior, ProtoMech pilot, vehicle commander or driver, or restores one crew hit for a DropShip, JumpShip, WarShip, Large Naval Vessel or Space Station.

NATURAL HEALING

Wounded personnel will recover naturally given enough time. For campaign purposes, this takes 15 consecutive Maintenance/Repair Cycles. If a MechWarrior, aerospace pilot or ProtoMech pilot is wounded again before natural healing can take effect, the count starts over.

A Veteran MASH vehicle has three operating theaters, providing the command to which it is attached with three Medical Teams (Target Number 7). Each team can deal with 25 individuals in a single Maintenance/Repair Cycle. Working in the field (+2), the teams have a final modified Target Number of 9 for treating their patients.

Three of the unit's MechWarriors have suffered damage from a combination of falls, ammunition explosions and punches to the head. Rolling a 7, 5 and 9 restores 1 damage point to the third MechWarrior.

EXPERIENCE

Over time, Technical and Medical teams can improve their Experience Ratings. Players should keep track of the number of scenarios successfully completed by each team. Consult the Support Personnel Experience Table (at left) to find the number of scenarios required to move up to the next Experience Rating.

A team that has suffered casualties can be brought back up to strength between scenarios, but the scenario count will drop to 0.

A Green Technical Team has survived four scenarios so far. If they can complete one more scenario, they will meet the requirement to advance to Regular Experience. They will have to survive another ten scenarios to reach Veteran status.

A Regular Medical Team has completed eight scenarios, but has suffered casualties. Brought back up to full strength, their count is reduced to 0 again and they must complete ten more scenarios to reach Veteran status.

CUSTOMIZATION

Stock designs (generally those presented in the Technical Readouts and other *BT* supplements) can be modified from their original specifications in two ways: via standardized "refit" kits or one-off custom modifications.

REFIT KITS

Refit kits are factory-produced packages, often created by the unit's original manufacturer. The parts have been carefully selected to be compatible with a specific unit. Extensive supporting documentation is provided to make installation relatively straightforward. The disadvantage of refit kits is that they offer only a limited choice of options. Refit kits are graded by complexity. A relatively minor modification can be done in the field, but others are more involved and require a fully equipped maintenance facility or even access to the kind of support only found in a manufacturing center.

Standard refit kits are available for any variant of a specific design published in the Technical Readouts. OmniMech versions of older designs are always treated as a separate design in such cases. For example, a BJ-1 *Blackjack* can be refitted into a BJ-1DB, BJ-1DC, BJ-2, BJ-3 or BJ-4 model. It cannot be refitted into a BJ2-O OmniMech.

Refit kits are not available for DropShips, JumpShips, WarShips or Space Stations.

Any weapon/equipment can be removed and left off; it does not always have to be replaced with something else. In all situations the refit class still applies to the type of item removed. The classification of a refit kit is determined by the highest class of modification included within the kit.

Class A Refit (Field): This kit allows players to replace one weapon with another of the same category and with the same (or fewer) critical spaces (including ammunition). For example, players may replace a medium laser with a medium pulse laser or ER medium laser, or replace an AC/10 with an LB 10-X AC, and so on. Additionally, changing a weapon's location or facing falls into this category.

Class B Refit (Field): This kit allows replacement of one category of weapon with another class of weapon(s), but with the same or fewer critical spaces (including ammunition); for example, replacing a machine gun and ammo with a small pulse laser, replacing a Gauss rifle with two large lasers (as they're both the same class and have fewer critical slots), and so on.

Class C Refit (Maintenance): This kit allows players to replace one type of armor with another (all locations); for example, replacing standard armor with ferro-fibrous. A Class C kit also enables replacement of a weapon or item of equipment with any other, even if it is larger than the item(s) being replaced; for example, replacing an ER large laser with an LRM-10 launcher and ammunition. Players may also change armor quantity and/or distribution, move a component, or add ammunition or a heat sink.

Class D Refit (Maintenance): This kit permits players to install a new item where previously there was none, or to install an ECM suite, C^3 system or targeting computer. Players may also change heat sink types (including those integral to an engine) or engine ratings (but not the engine type). Finally, a Class D kit allows players to replace a location with a custom part.

Class E Refit (Factory): This kit lets players change the type of myomer installed, install CASE, and/or increase the unit's Quality Rating one level.

Class F Refit (Factory): This kit lets players change a unit's internal structure type (all locations), engine type, gyro type, or cockpit type. If a fusion engine is replaced by another type of power plant, i.e. Fission or ICE, then the total number of heat sinks mounted should be adjusted as indicated on the bonus heat sink table (see p. 71, *TM*).

REFIT KIT INSTALLATION TABLE

Grade	Type	Time Multiplier	Modifier
A	Field	1	+1
B	Field	1	+1
C	Maintenance	2	+2
D	Maintenance	3	+2
E	Factory	4	+3
F	Factory	5	+4

A refit kit to upgrade a JM6-S JagerMech *to the JM6-DD model involves:*

- *Replacing the medium lasers with medium pulse lasers (A)*
- *Replacing the AC/5s with Ultra AC/5s (C)*
- *Replacing the standard engine with a XL (F)*
- *Add CASE (E)*
- *Change single heat sinks for double heat sinks (D)*
- *Move AC/2 ammo from center torso to left torso (C)*
- *Add an additional ton of AC/2 ammo to the right torso (C)*
- *Change armor from standard to ferro-fibrous (C)*

The highest refit class is F, making this a Factory-level refit.

A refit kit to modify an ALM-7D Fireball *to an ALM-8D model involves:*

- *Replacing the Streak SRM 2 and Ammo with 2 Medium Lasers (B)*
- *Add Armor (C)*

The highest refit class is C, making this a Maintenance-level refit.

Refit Cost and Availability

A refit kit can be sourced like any other component. The Availability Rating is equal to the highest Availability of the kit's contents. The cost of a refit kit is equal to the cost of the components plus 10 percent. The kit will normally have a Quality Rating of D unless players elect to source a kit of lower or higher quality.

Installing a Refit Kit

Installation requires a Technician Check with the appropriate modifiers from the Refit Kit Installation Table (see above) and the Maintenance, Repair and Salvage Check Modifier Table (see p. 170). The time required is equal to the time it would take to replace the components in the refit kit if a normal repair were being carried out, multiplied by the value from the time multiplier column on the Refit Kit Installation Table.

Failure doubles the time and also reduces the Quality Rating of the unit by one level. If players are tracking the Quality Rating of individual components, then all the items included in the refit kit have their Quality Rating reduced by one.

Refit Types

Refits fall into four categories: Field, Maintenance, Factory and Refurbishment.

Field: A field refit can be attempted with little or no access to support facilities.

Maintenance: More than a simple repair or replacement, this kind of refit requires access to the equipment and resources found in the appropriate type of transport cubicle (see *Transport Bays*, p. 239, *TM*).

Factory: A factory refit is a long and involved process that requires a production facility capable of producing the unit in question.

Refurbishment: In spite of the best efforts of Technical Teams, a unit's Quality Rating tends to degrade over time. This process can be reversed via refurbishment. No changes are made to the unit, but old parts are renovated or replaced, new or updated software installed and so on.

Refurbishment is a Grade E refit and requires access to Factory-grade facilities. The base time required is a week for a vehicle, battle armor unit or ProtoMech, two weeks for a 'Mech, aerospace fighter or Small Craft, a month for a DropShip or JumpShip, or three months for a WarShip or Space Station. The cost is equal to 10 percent of the unit's base value (not modified for quality).

Successful refurbishment improves the unit's Quality Rating by one level, or the Quality Rating of each individual component if players are using this depth of detail. It is not possible to go beyond a rating of F.

Omni Units

Omni units possess a fixed amount of pod space that can be configured with a wide variety of weapons and equipment—the only limitations being available tonnage, space and access to the desired equipment.

Players can adapt non-pod weapons and equipment by installing them in an OmniPod. Such OmniPods cost one-quarter of the base cost of the equipment being installed, and the process is considered a Grade D (Maintenance) refit. The time required is equal to that necessary to replace the component being installed in an OmniPod.

CUSTOMIZING

Customizing is the practice of installing non-factory replacement parts in a unit to improve or modify its performance. Omni units are designed to use interchangeable modular pods, so they are rarely customized. However, even Omni chassis contain certain integral components, such as engines, armor and fixed weapons. These items are not installed in modular pods, so they must be replaced with customizing procedures. DropShips, JumpShips, WarShips and Space Stations can only be customized with the assistance of a functioning shipyard.

Some examples of custom refits are found on published record sheets. They can be identified by their designation, which includes the name of individual for whom they were customized; for example, "BLK-6-KNT *Black Knight* Ian" is the designation of a customized *Black Knight*.

(**Warning!** Performing customization of any unit will invalidate its warranty.)

Customizing and Construction Rules

Generally, players must follow *BattleTech* construction rules when customizing a unit. A player cannot simply strap a couple of new medium lasers onto an existing design, as this would make the unit two tons too heavy. Other components must be removed or changed to make the appropriate space and weight available for new systems. However, players need not observe the standard construction prohibition against mixing technology bases when customizing units. Clan parts can be installed in Inner Sphere units and vice versa, though such modifications may be a bit more difficult than standard replacements. All other standard construction rules still apply.

Custom designs are classified in the same manner as refit kits, and the installation process is essentially identical, except that an additional +2 TN modifier is applied and the time required is double that of a refit kit. Customization automatically reduces the Quality Rating of the unit by one level. If individual components are being tracked, the reduction applies to all components, new and old. This reduction is in addition to the one imposed if the Technician Skill Check fails.

FrankenMechs (Optional)

Normally, it is not possible to combine structural components from 'Mechs of different weight classes. However, if players so wish (and the technical support they have available is skilled and desperate enough), they can attempt to create a "FrankenMech" using available parts to get that one extra 'Mech back into action for the next battle. Several limitations must be observed when creating one of these maintenance nightmares

Maximum Tonnage: The FrankenMech's weight limit is determined by the tonnage of the donor 'Mech from which the center torso was taken. Physical attack damage is based on the FrankenMech's tonnage—not the tonnage of the donor 'Mech from which it got a specific limb.

Engine: While almost any engine can be used, the FrankenMech's maximum tonnage dictates its performance. Divide the engine rating by the maximum tonnage and round down to find the Walking MP. Calculate the Running MP as normal.

Internal Structure: The weight of the FrankenMech's hybrid internal structure is based on the weight for each of the eight body locations. Each limb is considered to weigh 10 percent of the total internal structure weight. The center torso weighs 25 percent, the left and right torso weigh 15 percent each, and the head weighs 5 percent. The combined weight of all eight locations is added together and the result is rounded up to the nearest .5 tons.

The legs must be from a 'Mech of the same tonnage or heavier; for example, a FrankenMech based on a *Wolfhound* could use legs from 'Mechs of 35 tons or more. The legs need not be from the same 'Mech or even the same tonnage (if they are not from the same 'Mech, apply a +1 Piloting Skill Roll modifier; if the legs are from different tonnage 'Mechs, apply a +2 Piloting Skill Roll modifier). Humanoid and four-legged 'Mechs cannot swap arms and forelegs.

Internal structure critical slot distribution is retained from the donor design or, if no critical slot of the appropriate internal structure type is present, the number of critical slots listed on the Internal Structure Distribution Table, next page.

Gyro: The gyro must be at least big enough to match the engine rating as normal. For example, a 300 XL engine requires a gyro of 3 tons or more.

Cockpit: A FrankenMech can have only one cockpit. If a

INTERNAL STRUCTURE DISTRIBUTION TABLE

Hit Location	IS Endo Steel	Clan Endo Steel
Head	1	0
Center Torso	1	1
Side Torso	3	1
Arm	2	1
Leg	1	1

'Mech with a torso-mounted cockpit is combined with one mounting a cockpit in the head, then one cockpit must be discarded.

Jump Jets: Jump jet performance depends on the weight class of the FrankenMech. Smaller jump jets can be retained on larger 'Mechs, but their performance is reduced and fractional Jumping MPs are dropped, meaning two half-ton jump jets are required to give the same performance as a 1-ton jump jet while four half-ton jump jets would be required to match a 2-ton jump jet. Heat generation is calculated on a per-jump jet basis, so a 60-ton FrankenMech with six half-ton jump jets will have a Jumping MP of 3, but will generate 6 points of heat. In this situation, if a jump jet is damaged during a scenario, the fractional jump jet(s) no longer provide any Jumping MP; in the 60-ton example above, if one of the six jump jets gets damaged during a scenario, the 'Mech's Jumping MP is reduced to 2 (even though the fifth undamaged jump jet could still technically be used to generate heat and could sustain its own critical hit).

Myomers: Players cannot mix myomer types. If MASC is installed, only standard myomers can be used.

Heat Sinks: All heat sinks must be of the same type. The number of heat sinks internal to the engine are calculated as normal. It may be necessary to remove or rearrange the placement of heat sinks on the Critical Hit Table.

Weapons and Equipment: Each location starts with the weapons and equipment it originally mounted. To match the FrankenMech's target weight, players may need to remove some components. The two exceptions to this are heat sinks (noted above) and engine critical slots in the left and right torso, which must match the engine type installed in the center torso.

Armor: The armor limit per location is still determined by the internal structure. Each location starts with the armor it originally had. Armor can be added or removed using the customization rules as normal (see *Patchwork Armor*, p. 377, *TO*, if different armor types are involved). Stealth Armor is only effective if all locations mount it.

OmniMechs: Any OmniMech components incorporated into a FrankenMech will lose all benefits and special abilities associated with OmniMechs. They cannot be reconfigured with alternate pod load-outs. A FrankenMech cannot carry Mechanized Battle Armor.

Creating the Monster: The process follows the refit and customization rules. Treat attaching a different torso as replacing it, and attaching an alternate limb or head as reattaching one that has been blown off. Time required is multiplied by the appropriate modifier based on the refit rating. If players are not tracing individual component Quality Ratings, the resulting creation will use the lowest Quality Rating of the unit from which it was sourced as a starting point when determining the final Quality Rating. Weapons and equipment in the sections being attached need not be installed separately.

A member of the famed Snord's Irregulars, master technician "Shorty" Sneede, has built himself a FrankenMech using parts from a Rifleman, Warhammer, Archer *and* Phoenix Hawk. *The main contributor to this ambitious project is the* Rifleman, *which provides the center torso—fixing the target weight at 60 tons. The* Rifleman *also contributes the left leg, right leg and right torso. The right arm is provided by a* Warhammer, *while the left torso and left arm come from an* Archer. *The head is scavenged from a* Phoenix Hawk (*a 3-ton cockpit.)*

The Rifleman*'s 240 engine is retained (11.5 tons), giving Sneede's creation a Walking MP of 4 and Running MP of 6. The* Rifleman*'s 3-ton gyro is also retained.*

Internal structure weighs in at 6.5 tons (Center Torso 1.5, Right Torso 0.9, Left Leg 0.6, Right Leg 0.6, Right Arm 0.7, Left Torso 1.05, Left Arm 0.7 and Head 0.225 giving 6.275 tons, rounded up to 6.5).

Total armor values from the donor 'Mechs are 145 points (Head 6, Center Torso 22, Center Torso (Rear) 4, Right Torso 15, Right Torso (Rear) 2, Left Torso 24, Left Torso (Rear) 6, Right Arm 20, Left Arm 22, Right Leg 12, Left Leg 12 = 145). One point is dropped from the left torso rear to bring the total down to 144 points of standard armor, giving a final armor weight of 9 tons. If the additional point had been retained, the armor weight would have been 9.5 tons.

The weapons and ammunition for each of the donor 'Mechs are retained. The Rifleman *contributes a medium laser (1 ton) in the right torso. The* Warhammer *provides a PPC (7 tons) in the right arm (no hand actuator), while the* Archer *adds an LRM-20 and two tons of LRM ammunition in the left torso (12 tons) and a medium laser (1 ton) and a full set of actuators in the left arm. Shorty decides to augment this weaponry by adding two medium lasers: one in the left torso, the second in the center torso (rear).*

He chooses to keep the heat sink in the Rifleman*'s left leg, and a second in the* Warhammer*'s right arm. The 240 fusion engine included 9 more sinks, bringing the total to 11 heat sinks. Adding 3 more heat sinks (for a total of 4 tons) brings the total to 14 and uses up the remaining tonnage.*

This FrankenMech is a Grade D Customization (as it replaces several locations with nonstandard parts and installs new weapons and components), giving the operation a target number modifier of +4 (Grade D +2, Customization +2) and a time modifier of 3. Sneede is working as part of an Elite Technical Team (TN 5) at a fully equipped maintenance facility (–2) and they have elected to take their time (–1, double time). The final modified Target Number is 6 [5 (Elite Experience Rating) + 2 (Grade D) + 2 (Customization) – 2 (maintenance facility) – 1 (taking time)], and the time modifier will be 6 (3 x 2).

Attaching the left torso takes 240 minutes. The left and right arm require 180 minutes each. The head takes an additional 200 minutes. Adding two medium lasers requires 120 minutes each, while each of three heat sinks will take 90 minutes. Removing 1 point of armor adds another 5 minutes, giving a grand total of 1,315 minutes. This is multiplied by 6 to give a final time of 7,890 minutes, or 16.4375 days of effort to create Sneede's masterpiece (twice that if the Technician Check fails). Assuming all components started at a Quality Rating of D, the 'Mech will be Quality Rating C if the Technician Check is successful, or B if not.

SALVAGE

To the victor go the spoils. Once the dust of battle has settled, the unit that can claim control of the battlefield (see *Determining Victory*, p. 257, *TW*) can pick over the remains of their fallen enemies and their own badly damaged units. A wreck can be removed from the field to be repaired or stripped down later, or it can be stripped in the field. The time required to remove a unit is given on the Unit Recovery Time Table (at right). A player gets only one attempt at this. Once the current Maintenance/Repair Cycle ends, nothing more can be recovered from the battlefield.

To remove an individual unit from the field requires a 'Mech to drag it off, or a vehicle with sufficient empty cargo capacity to carry it off (see *Cargo Carriers*, p. 261, *TW*). Tractors (see *Tractors*, p. 205, *TW*; and *Vehicles*, p. 149, *TO*) can tow another vehicle. Each 'Mech or vehicle can recover one unit (for 'Mechs, see *Dragging a 'Mech*, p. 99, *TO*), though the unit must be of equal or lesser tonnage than the dragging unit. Large Naval Vessel and Large Airship Support Vehicles, as well as Mobile Structures, cannot be recovered in the time available. In space a player requires a DropShip equipped with a tug docking/towing adaptor to recover DropShips, JumpShips or WarShips (see *Naval Tug Adaptor*, p. 334, *TO*). Fighters and Small Craft can be recovered by DropShips or WarShips on a space map. DropShips cannot be recovered on the ground. Units participating in salvage operations cannot have participated in combat, repair and refit or search and rescue operations during the current scenario and/or Maintenance/Repair Cycle.

Components that have been destroyed (see *Diagnosis*, p. 176) cannot be salvaged. 'Mech center torsos and vehicle locations other than turrets and rotors also cannot be salvaged. However, any other component listed on the Master Repair Table (see p. 183) can be salvaged, including entire limbs and body sections. If the Quality Rating of individual parts is being tracked, the rating of any salvaged part automatically drops one level. Any component that drops to Salvage status (Quality Rating A) suffers the penalties outlined on the Salvage Quality Equipment Table (see p. 192). Any component reduced past Salvage status is treated as destroyed.

To salvage a component, a player must make a successful Technician Check using the appropriate modifier listed for the part on the Master Repair Table (see p. 183) and the Salvage Modifiers Table (see p. 192). If a component is undamaged, use the least damaged row from the table (if there is more than one choice); i.e. trying to salvage an undamaged right torso a player would use the "Up to 1/4 damage" Internal Structure row to determine modifier and time. Salvaging the part also requires the base time shown on the table (parts can be salvaged more quickly by using the Rush Jobs rule; see p. 182). Units supporting salvage operations cannot have participated in the battle or repair and refit operations.

If the Technician Check succeeds, the part is salvaged successfully. If the roll fails, the part was not successfully removed. A Technical Team may not attempt to salvage the same component twice, nor may another team of the same or lower Experience Rating attempt the job. Only a Technical Team with a higher Experience Rating may attempt to salvage the component after a failed attempt. If an Elite team fails to salvage a component, the component cannot be removed without destroying it. Whether the Technician Check succeeds or fails, the team still spends the required time.

If the Technician Check roll result is a 2, a mishap has occurred and each Technical Team involved in that attempt suffers 1D6 casualties. The wounded can be returned to duty as normal, but the dead will permanently reduce the strength of a Technical Team (see *Mostly Dead vs. Truly Dead*, p. 176).

Terrain Factor Rules: If players are using the Terrain Factor (see p. 64, *TO)* and Battlefield Wreckage (see p. 187, *TO*) rules, and a hex that contains a destroyed unit—now being tracked as battlefield wreckage—is reduced, this reduction affects the salvage quality of the destroyed unit. Whenever such a hex is reduced (such as from an ultra-rough hex to a rough hex), the Quality Rating of any destroyed units in that hex are automatically reduced by 1 level (see Maintenance Check Table, p. 172). If tracking individual component ratings, all component ratings are likewise reduced by 1 level. Any components reduced

UNIT RECOVERY TIME TABLE

Unit Type	Recovery Time*
'Mech	60 minutes
ProtoMech	20 minutes
Battle Armor	10 minutes
Light Combat Vehicle	20 minutes
Medium Combat Vehicle	40 minutes
Heavy Combat Vehicle	60 minutes
Assault Combat Vehicle	80 minutes
Small Support Vehicle	15 minutes
Medium Support Vehicle	40 minutes
Large Support Vehicle	80 minutes
Super-Heavy Support Vehicle	100 minutes
Large Naval Vessel Support Vehicle	160 minutes
Conventional Fighter	60 minutes
Aerospace Fighter	60 minutes
Small Craft	120 minutes
DropShip	180 minutes
JumpShip	360 minutes
WarShip	480 minutes

*If Planetary Conditions are in use (see p. 28, *TO*), use the Multipliers from the Planetary Conditions section of the Rearm Time Table (see p. 186) to modify the unit recovery times (in all instances round up). Does not apply to airborne aerospace units in space.

SALVAGE MODIFIERS TABLE

Situation	Modifier
General	
Salvage Arm/Lift Hoist	–1
Ground	
'Mech	–1
Mobile Field Base (see p. 171)	–2
Space	
Space Operations Adaptation	–1

SALVAGE QUALITY EQUIPMENT TABLE

System	Effects (1D6 roll)
Energy Weapons	(1-2) +1 to-hit; (3-4) –1 damage per hit; (5) Misfire on to-hit roll of 2 or 3; (6) +2 heat per shot
Ballistic Weapons	(1-2) +1 to-hit; (3-4) –1 damage per hit; (5) Jam on to-hit of 2 or 3; (6) Half ammo capacity
Missile Weapons	(1-2) +1 to-hit; (3-4) –2 on Missile Hits Table; (5) Jam on to-hit of 2 or 3; (6) Half ammo capacity
Melee Weapons	(1-2) +1 to hit; (3-4) –2 damage per hit; (5-6) Piloting Skill +2 per attack
Engines, Fusion/Fission	(1-2) +3 heat/turn; (3-4) –1 MP; (5-6) Piloting Skill +1 per turn of Run/Flank/Max Thrust
Engines, Other	(1-3) –1 MP; (4-5) Piloting Skill +1 per turn of Run/Flank/Max Thrust; (6) Half fuel capacity
Gyro/Controls	(1-3) –1 MP; (4-5) Piloting Skill +2 per turn of Run/Flank/Max Thrust; (6) No Torso/Turret Twist
Electronics	(1-4) Half effect [range or modifier reduced by half]; (5-6) +1 to-hit for all ranged weapons
Jump Jets/MASC/TSM	(1-3) –2 MP; (4-5) Piloting Skill +2 when used; (6) +3 heat when used
Other Equipment	(1-4) Half effect [range, time, capacity, damage, or –1 MP]; (5-6) Piloting Skill +2 to use

Energy Weapons include lasers, PPCs, flamers and TAG
Ballistic Weapons include anti-missile systems, capital missiles and artillery, such as Long Toms, Thumpers, Snipers and Arrow IV
Missile Weapons include SRM, MRM, LRM, MML, ATM, Rocket Launchers and Streaks (Streak launchers affected by a –2 result on the Missile Hits Table lose 1 missile per volley)
Electronics includes Targeting Computers, C^3s, Artemis, Narc effects, Active Probes and ECM

AMMUNITION QUALITY TABLE

Quality Rating	Effects
A	Weapon jams on to-hit roll of 4† or less. Roll 2D6: ammunition will explode on 11+*
B	Weapon jams on to-hit roll of 3† or less. Roll 2D6: ammunition will explode on 12+*
C	Weapon jams on to-hit roll of 2*
D	Ammunition functions normally
E	Ammunition functions normally
F	Ammunition functions normally

†Ultra Autocannon firing in Ultra mode add +1; RACs add +1 when firing 2-3 rounds, +2 when firing 4-5 rounds, or +3 when firing 6 rounds.
*Gauss ammunition does not explode.

below an A rating in this fashion are considered destroyed, and if the unit's overall Quality Rating is reduced below A, it is classified as "truly destroyed" (see p. 175).

SPECIAL CASES

The following special rules apply:

Heat Sinks: Heat sinks integral to an engine cannot be salvaged except as part of the engine as a whole. They can later be removed from the power plant, but that operation cannot be conducted in the field.

Fuel: Provided a vehicle powered by a fuel-consuming power plant is not truly destroyed, it is possible to salvage half the remaining fuel.

TSM: Individual critical slots of triple-strength myomer can be salvaged, but a minimum of 6 (or 12 for Industrial TSM) per 'Mech are required to receive the benefits of the technology.

Ammunition: Normally, ammunition is considered to have a Quality Rating of D (or the Quality Rating generated when making an Availability Check; see the Ammunition Quality Table, above), and this does not change during play. Clan ammunition used in Inner Sphere weapons, or Inner Sphere ammunition used in Clan weapons, is treated as Quality Rating B unless it is first modified by a Technical Team. No Technician Skill Check is required, but it takes 30 minutes for a team to modify 1 ton (or part thereof) of ammunition.



A Dervish, *having stumbled into a booby-trapped building, awaits friendly infantry support.*

Booby Traps: Nothing can be salvaged from a unit that employs a Booby Trap (see p. 297, *TO*) during the battle. When salvaging equipment from a unit that contains an un-triggered Booby Trap, there is a chance it will go off. Roll 2D6. On a result of 11+, the Booby Trap is activated, destroying the salvaged unit and all friendly support units participating in the operation.

DESIGN QUIRKS (OPTIONAL)

BattleTech story and sourcebook fiction is filled with descriptions of various designs whose unique quirks affect their abilities—from the *Javelin* and its off center of gravity that makes it prone to falling at high speeds, to the *Catapult* and its faulty jump jets that can break and increase its heat during battle, to the *Behemoth* DropShip that requires two docking collars and so on. There are also illustrations of 'Mechs that often fall far outside the norm, such as the *Stalker* that plainly doesn't have arms, or the *Jenner* that has obvious difficulty torso twisting and so on.

However, game design and balance cannot be dictated by fiction or illustrations. Therefore, while such fiction is fun and believable and the wide variety of illustrations provides a wonderful diversity, not seeing such unique quirks play out on the field of battle—particularly when real-world vehicles provide so many existing quirks—lessens the connection between the universe and the game board.

Design quirks are a set of optional rules that allow players to bring the individuality of illustrations and story and sourcebook fiction—not to mention the uniqueness that can result from an endless series of field patches by a resourceful tech—to the gaming table. This section provides a series of positive and negative quirks, each with a numerical value that determines the relative strength or weakness of a given quirk. As this section—like all sections in this book—is considered advanced rules, it is strongly recommended that if a player chooses a positive quirk for a design, he or she should give it negative quirks of equal or greater value as well. All players in a group should agree to the use of design quirks before play begins, and so each playing group can decide if negative quirks must balance positive quirks.

POSITIVE DESIGN QUIRKS

The following positive design quirks each contain a rule that enhances how the design performs during a game, whether during movement or combat, a heat-related advantage and so on. Some positive quirks are available only to certain types of units, as indicated on the Positive Quirk Table (see p. 194). When applying a quirk to weapons grouped into a bay, all weapons receive the quirk, but the cost is only paid once.

Accurate Weapon (Variable Points)

Being of exceptional design, a weapon or bay is more accurate than normal, and so all to-hit target numbers for that weapon or bay receive a –1 modifier. The cost is 1 point per 5 points (or fraction thereof) of maximum damage the weapon or bay can inflict in a single Damage Value grouping. More than one weapon or bay on a unit can receive this positive quirk, but the cost for each must be paid.

Anti-Aircraft Targeting (Variable Points)

Some BattleMechs like the *Rifleman* have an advanced targeting system that can accurately target flying units: VTOLs, WiGEs, conventional and aerospace fighters, Fixed-Wing Support Vehicles, DropShips and units performing a combat drop (see p. 22). All attacks against such units while airborne (not grounded) receive a –2 target number modifier. The cost is 1 point per 7 points (or fraction thereof) maximum damage that all the weapons mounted on the unit can inflict (excluding physical attack weapons). This bonus is only available when the unit itself is on the ground.

Atmospheric Flyer (3 Points)

This aerospace unit is exceptionally stable and maneuverable when operating in atmosphere. All control rolls receive a –1 target number modifier while in atmosphere.

Battle Computer (5 Points)

The unit is an advanced command unit equipped with a powerful tactical battle computer that allows for more effective command of a battle force; the *Cyclops* is a prime example. Each turn the unit is on the battlefield and the MechWarrior or crew is conscious, their battle force receives a +2 modifier to all Initiative rolls. This modifier is not cumulative with that of a Command BattleMech.

Combat Computer (3 Points)

The unit possesses an advanced combat computer like that installed in the *Stalker.* The computer can aid the MechWarrior or pilot in managing heat levels, and each turn the unit will generate four points of heat less than normal (but never less than zero).

Command BattleMech (2 Points)

Some BattleMechs, such as the *Atlas*, *BattleMaster*, *Black Knight*, *King Crab*, *Mongoose*, *Marauder* and *Wolverine*, are designed as command units. During each turn that one or more Command BattleMechs are present on the battlefield, a battle force receives a +1 modifier to all Initiative rolls. This modifier is not cumulative with a Battle Computer.

Cowl (4 Points)

BattleMechs like the *Cyclops* have been outfitted with a protective cowl that provides an additional 3 points of head armor against all attacks except those that originate along the row of hexes directly in front of the cowled 'Mech.

Docking Arms (1 Point)

The unit is equipped with docking arms to assist DropShips and Small Craft attempting to mate with a docking collar. Piloting rolls for assisted docking attempts receive a –1 target number modifier.

Easy to Maintain (1 Point)

Some units, such as the *Thorn*, are easier to maintain and repair. All repair or replacement rolls made for a unit with this quirk receive a –1 target number modifier.

Easy to Pilot (2 Points)

Training units such as the *Chameleon* and *Crockett* are designed to be easier for a rookie MechWarrior or pilot to operate.

A MechWarrior or pilot with a Piloting Skill of more than 3 will receive a –1 target number modifier for Piloting Skill rolls that they have to make as a result of damage or underlying terrain. More skilled MechWarriors receive no benefit.

POSITIVE QUIRK TABLE

Type	Cost	'Mech*	Vehicle†	Battle Armor	Fighter/Small Craft‡	DropShip	JumpShip/ WarShip/ Space Station
Accurate Weapon	Variable	Yes	Yes	Yes	Yes	Yes	Yes
Anti-Aircraft Targeting	Variable	Yes	Yes	No	No	No	No
Atmospheric Flyer	3	No	No	No	Yes	Yes	No
Battle Computer	5	Yes	Yes	No	No	No	No
Combat Computer	3	Yes	No	No	Yes	No	No
Command BattleMech	2	Yes	No	No	No	No	No
Cowl	4	Yes	No	No	No	No	No
Docking Arms	1	No	No	No	No	No	Yes
Easy to Maintain	1	Yes	Yes	Yes	Yes	Yes	Yes
Easy to Pilot	2	Yes	No	Yes	Yes	Yes	Yes
Extended Torso Twist	3	Yes	No	No	No	No	No
Fast Reload	1	Yes	Yes	Yes	Yes	No	No
Hyper-Extending Actuators	1	Yes	No	No	No	No	No
Improved Cooling Jacket	1	Yes	No	No	Yes	Yes	Yes
Improved Communications	2	Yes	Yes	Yes	Yes	Yes	Yes
Improved Life Support	1	Yes	No	Yes	No	No	No
Improved Sensors	3	Yes	Yes	No	No	No	No
Improved Targeting, Short	3	Yes	Yes	No	Yes	Yes	Yes
Improved Targeting, Medium	4	Yes	Yes	No	Yes	Yes	Yes
Improved Targeting, Long	5	Yes	Yes	No	Yes	Yes	Yes
Internal Bomb Bay	3	No	No	No	Yes	Yes	No
Modular Weapons	1	Yes	Yes	Yes	Yes	Yes	No
Multi-Trac	2	Yes	No	No	No	No	No
Narrow/Low Profile	3	Yes	Yes	No	No	No	No
Protected Actuators	1	Yes	No	No	No	No	No
Reinforced Legs	1	Yes	No	No	No	No	No
Searchlight	1	Yes	Yes	No	No	No	No
Stable	2	Yes	No	No	No	No	No
Trailer Hitch	1	No	Yes††	No	No	No	No
Variable Range Targeting	Variable	Yes	No	No	No	No	No
VTOL Rotor Arrangement	1	No	Yes**	No	No	No	No

*Includes IndustrialMech, BattleMech or OmniMech **VTOL Vehicles ony †Includes Combat Vehicle, Support Vehicle
††Combat Wheeled and Tracked Vehicles only ‡Includes Fixed-Wing Support Vehicle §Includes Satellite

Extended Torso Twist (3 Points)

Unlike most 'Mechs, one with this quirk can turn its torso much further. When torso twisting, the 'Mech can change its facing by one or two hexsides.

Fast Reload (1 Point)

BattleMechs like the *Hatchetman* and *Enforcer* use large removable ammunition magazines that allow them to reload much faster than normal. Units with this quirk can reload in half the normal time.

Hyper-Extending Actuators (1 Point)

The arm actuators of 'Mechs like the *Quickdraw* can bend much further than normal. Even if it has lower arm and/or hand actuators, it can still flip arms to fire all arm-mounted weapons into its rear arc.

Improved Cooling Jacket (1 Point)

One weapon's design incorporates a highly effective cooling jacket. When fired, this weapon generates 1 point less heat (never less than 1 point). More than one weapon or bay can have this positive quirk, but the cost for each must be paid.

Improved Communications (2 Points)
The unit has a powerful communications suite that can burn through standard electronic countermeasures. Hostile Guardian ECM or Clan ECM systems do not interfere with this unit, but Angel ECM (see p. 279, *TO*) still has its normal effect.

Improved Life Support (1 Point)
When determining damage to the MechWarrior or pilot as a result of heat following a life support critical hit, treat the unit's heat level as being 5 points lower (an example of this is the *Shadow Hawk*).

Improved Sensors (3 Points)
A unit with this quirk is treated as if it has an active probe. If it is equipped with an active probe, add 2 to the Active Probe's effective range.

Improved Targeting (3, 4 or 5 Points)
The unit has advanced targeting capabilities in one range bracket. The quirk can be applied up to three times, but can be taken only once per range bracket (the cost of the quirk equals how many range brackets it has been applied to; i.e. 1 range bracket equals 3 points, 2 range brackets equals 4 points and if applied to all 3 range brackets then 5 points). All ranged attack to-hit target numbers at the selected range bracket receive a –1 modifier. A unit with this quirk cannot take Improved Targeting for the Extreme range bracket, nor can this quirk be combined with Variable Range Targeting.

Internal Bomb Bay (3 Points)
The unit can use its internal cargo capacity as an internal bomb bay, releasing up to 6 bombs each turn. However, in the turn that ordnance is being dropped, there is a danger that ground fire will hit the exposed bay. On a roll of 10+, damage received from ground fire will strike the open bay and detonate all bombs remaining. The resulting damage is applied directly to the unit's SI.

Modular Weapons (1 Point)
Though lacking the flexibility of an OmniMech, a unit with modular weapons like the *O-Bakemono* can be repaired or customized more easily. A weapon can be replaced in half the normal time (though repairs in-place take the usual amount of time). When using the Customization Rules (see p. 188), half the time is required.

Multi-Trac (2 Points)
A 'Mech with this quirk can track multiple targets and may attack any number of targets in its front and arm firing arcs in the same turn without adding the secondary-target modifier. Secondary targets in the rear arc are treated as normal.

Narrow/Low Profile (3 Points)
Designs such as the *UrbanMech*, *Vulcan* and *Lancelot* have a narrow or low profile that makes them harder to hit. Ranged attacks against a unit with a Narrow/Low Profile receive a +1 to-hit modifier.

Protected Actuators (1 Point)
Armor protection around the actuators is more effective, making a 'Mech with this quirk more resistant to Leg and Swarm attacks by conventional infantry and battle armor. The target number for such attacks receives a +1 modifier.

Reinforced Legs (1 Point)
Designed for executing the dreaded "Death From Above" attack, some 'Mechs (the *Highlander*, for example) suffer half the normal damage to the legs when performing Death From Above successfully.



Berith of the Opacus Venatori, in his Archangel, *prepares to unleash a capacitor-charged heavy PPC in his duel with Stacy Church of the Black Widows.*

Searchlight (1 Point)

Units such as the *Warhammer*, *Loki*, *Guillotine*, *Defiance* and *Rifleman* are equipped with high-power searchlights (see p. 57, *TO*).

Each time a searchlight-equipped unit takes a hit in any torso location (Front or Rear), the player must roll 2D6 to determine if the searchlight is destroyed. A result of 7+ means the searchlight is destroyed, in addition to the normal effects of the attack.

Stable (2 Points)

'Mech designs such as the *Dragon* are exceptionally stable, receiving a –1 target number modifier when forced to make a Piloting Skill roll as a result of a physical attack.

Trailer Hitch (1 Point)

Available only to Tracked or Wheeled Combat Vehicles, the Trailer Hitch quirk is a common adaptation that enables the vehicle to tow another vehicle with a wheeled or tracked motive system that also has the Trailer Hitch quirk (i.e. both units must have the Trailer Hitch quirk), in the same manner as a Support Vehicle with the Tractor chassis modification. Units with a Trailer Hitch can thus employ the rules for Tractors (see p. 205, *TW*). (Support Vehicles must have the appropriate chassis modifications, and so cannot benefit from this quirk.)

Variable Range Targeting (Variable Points)

A BattleMech with this quirk has an advanced targeting system that allows it to launch more accurate attacks at either long or short range, at the expense of reduced accuracy at other ranges. During a turn's End Phase, the controlling player must designate whether this improved targeting feature will be active at long or short range the next turn. All weapon attacks at the designated range receive a –1 target number modifier, but all weapon attacks at the alternative range receive a +1 target number modifier (medium range remains unmodified). The cost is 1 point per 5 points (or fraction thereof) maximum damage that all the weapons mounted on the 'Mech can inflict (excluding physical attack weapons). This quirk cannot be combined with Improved Targeting.

VTOL Rotor Arrangement (1 Point)

All VTOLs in *BattleTech* have two rotors that rotate in opposite directions to counter each other's torque. In most cases, they consist of a single main rotor and a smaller, tail-mounted rotor called a stabilizing rotor. However, VTOLs can also be built with dual or co-axial rotors. Players should only take this quirk if they are also using the advanced vehicle movement rules (see *Vehicles*, p. 24, *TO*).

Regardless of their actual arrangement, all rotors are treated the same way for purposes of armor and damage; the rotors' hit location represents both rotors on a VTOL.

A VTOL with dual rotors mounts two rotors of equal size, both on top of the craft, either side-by-side or one in front of the other. The Karnov UR transport is an example of this arrangement, which affords greater stability at the cost of maneuverability. VTOLs with dual rotors cannot perform sideslip or bootlegger maneuvers (see *Advanced Maneuvers*, p. 25, *TO*). Additionally, dual rotors increase all of a VTOL's turn modes by 1 (see p. 25, *TO*), but also apply a –1 target number modifier to all Piloting Skill Rolls.

A VTOL with co-axial rotors mounts two rotors of equal size together on the same mast. The Warrior H7 attack helicopter is an example of such an arrangement, which grants greater maneuverability at the cost of reduced overall stability. The usual +2 modifier for VTOLs no longer applies to rolls on the Failed Maneuver Table (see p. 26, *TO*). However, each critical hit to the rotors (see *Rotor Damage*, p. 197, *TW*) adds a +1 modifier to all Piloting Skill Rolls in addition to the standard effects.

NEGATIVE DESIGN QUIRKS

The following negative design quirks each contain a rule detrimental to how the design performs during a game, whether during movement or combat, heat-related and so on. Some negative quirks are available only to certain types of units, as indicated on the Negative Quirk Table (see p. 197). When applying a quirk to weapons grouped into a bay, all weapons receive the quirk, but the value is received only once.

Ammunition Feed Problem (1 Point)

The ammunition feed for one ballistic or missile weapon or bay has a tendency to jam at inconvenient moments. After making a to-hit roll, roll 2D6. On a result of 10+ the weapon jams and cannot be fired again in this battle. On a roll of 12, the new round of ammunition will explode in the weapon for normal damage. Per normal rules, Gauss weapon ammunition will not explode, but the weapon itself does.

Atmospheric Flight Instability (2 Points)

The aerospace unit is not very stable when flying within a planet's atmospheric envelope. All control rolls receive a +1 target number modifier.

Bad Reputation (1 Point)

While perfectly sound, this unit type has acquired an unwarranted bad reputation (for example the *Blackjack* during the Succession Wars). As a result, it is worth only half the normal resale value. Note that when buying this unit, players still must pay the normal value.

Cooling System Flaws (3 Points)

A flaw in the design can result in the 'Mech generating excess heat. Whenever the 'Mech executes or receives a physical attack, falls, or is forced to make a Piloting Skill roll because it received 20 points or more damage, roll 2D6. On a result of 10+ the 'Mech will generate 5 points more heat each turn for the rest of the battle.

Cramped Cockpit (2 Points)

Poorly designed, the cockpit of units like the *Wolverine* and *Stinger* are very cramped. The unit is considered to have the equivalent of a Small Cockpit (see p. 211, *TM)*, but it takes up the same weight and critical slots as a standard one.

Difficult Ejection (1 Point)

Certain designs have flaws in their emergency escape systems that can prove detrimental to the health of the MechWarrior or pilot. If the MechWarrior or pilot fails a Piloting Skill Roll when ejecting, he or she suffers an additional point of damage (this is in addition to the standard damage taken).

NEGATIVE QUIRK TABLE

Type	Value	'Mech*	Vehicle†	Battle Armor	Fighter/Small Craft‡	DropShip	JumpShip/ WarShip/ SpaceStation
Ammunition Feed Problem	1	Yes	Yes	Yes	Yes	Yes	Yes
Atmospheric Flight Instability	2	No	No	No	Yes	Yes	No
Bad Reputation	1	Yes	Yes	Yes	Yes	Yes	Yes
Cooling System Flaws	3	Yes	No	No	No	No	No
Cramped Cockpit	2	Yes	No	No	Yes	No	No
Difficult Ejection	1	Yes	No	No	Yes	No	No
Difficult to Maintain	1	Yes	Yes	Yes	Yes	Yes	Yes
EM Interference	1	Yes	Yes	Yes	Yes	Yes	No
Exposed Actuators	1	Yes	No	No	No	No	No
Exposed Weapon Linkage	2	Yes	Yes	No	No	No	No
Fragile Fuel Tank	2	No	Yes**	No	Yes	Yes	Yes
Gas Hog	2	Yes	Yes	No	Yes	Yes	Yes
Hard to Pilot	2	Yes	Yes	Yes	Yes	Yes	Yes
Inaccurate Weapon	Variable	Yes	Yes	Yes	Yes	Yes	Yes
Large DropShip	1	No	No	No	No	Yes	No
No/Minimal Arms	2	Yes	No	No	No	No	No
No Cooling Jacket	2	Yes	No	No	Yes	Yes	Yes
No Ejection Mechanism	2	Yes	No	No	Yes	No	No
Non-Standard Parts	1	Yes	Yes	Yes	Yes	Yes	Yes
No Torso Twist	2	Yes	No	No	No	No	No
Poor Cooling Jacket	1	Yes	No	No	Yes	Yes	Yes
Poor Life Support	1	Yes	No	No	Yes	No	No
Poor Performance	3	Yes	Yes	No	Yes	Yes	Yes††
Poor Targeting, Short	2	Yes	Yes	Yes	Yes	Yes	Yes
Poor Targeting, Medium	3	Yes	Yes	Yes	Yes	Yes	Yes
Poor Targeting, Long	4	Yes	Yes	Yes	Yes	Yes	Yes
Poor Workmanship	1	Yes	Yes	Yes	Yes	Yes	Yes
Prototype	2	Yes	Yes	Yes	Yes	Yes	Yes
Sensor Ghosts	2	Yes	Yes	Yes	Yes	Yes	Yes
Unbalanced	1	Yes	No	No	No	No	No
Un-streamlined	2	No	No	No	Yes	Yes	No
Weak Head Armor	Variable	Yes	No	No	No	No	No
Weak Legs	1	Yes	No	No	No	No	No
Weak Undercarriage	1	No	No	No	Yes	Yes	No

*Includes IndustrialMech, BattleMech or OmniMech
**ICE-powered vehicles only
†Includes Combat Vehicle and Support Vehicle
††WarShips only
‡Includes Fixed-Wing Support Vehicle
§Includes Satellite

Difficult to Maintain (1 Point)
Some units are harder to maintain and repair. All repair or replacement rolls made for this unit receive a +1 target number modifier.

Exposed Actuators (1 Point)
The actuators on some designs (such as the *Commando)* are poorly protected and more vulnerable to the effects of Swarm and Leg attacks. The target numbers for such attacks receive a –1 modifier.

EM Interference (1 Point)
An energy weapon is insufficiently shielded and causes interference with other delicate electronics. The round after the weapon has been fired, the following equipment aboard the 'Mech will not function: Targeting Computer, any ECM, any Active Probe, Artemis IV FCS, Artemis V FCS, any C^3, NARC, MASC, Cockpit Command Console, Chameleon LPS, Blue Shield PFD, Electronic Warfare Equipment, Streak Launchers, MRM FCS, Null Signature System, Supercharger, Void Signature System and any Stealth Armor.

Exposed Weapon Linkage (2 Points)
Some designs such as the *Cygnus* have the mechanics of a weapon dangerously exposed. When a location that holds such a weapon is hit, roll 2D6. On a roll of 10+ that weapon receives one critical hit on the first available slot. This quirk can be taken only once and only for a single weapon.

Fragile Fuel Tank (2 Points)
In a fighter, any critical hit to the fuel tank will result in an explosion on a 2D6 result of 8 or more, not the usual 10 or more. Whenever a vehicle suffers any critical hit, it will also suffer a Fuel Tank critical effect on a 2D6 result of 10+.

Gas Hog (2 Points)
The unit is very inefficient and consumes fuel at twice the normal rate when pushed above Cruising/Safe Thrust speed. This quirk cannot be applied to fusion- or fission-powered ground and naval units.

Hard to Pilot (2 Points)
This unit is hard to operate and MechWarriors, pilots or crew receive a +1 target number modifier for all necessary Piloting/Driving Skill Rolls.

Inaccurate Weapon (Variable Points)
Being of poor design, a weapon is less accurate than normal and all to-hit numbers for that weapon or bay receive a +1 modifier. The value is 1 point per 5 points (or fraction thereof) of maximum damage the weapon can inflict in a single Damage Value grouping. More than one weapon or bay on a unit can receive this negative quirk.

Large DropShip (2 Points)
This DropShip is so big that it takes up two docking collars instead of one, as in the case of the *Behemoth*.

No/Minimal Arms (2 Points)
Some 'Mechs effectively have no arms, such as the *Stalker* and *Locust*, or arms that are totally ineffective in aiding a fallen 'Mech in regaining its feet. When making a Piloting Skill Roll to stand up, such 'Mechs receive a +2 modifier to the target number; this is not cumulative with the advanced rules for attempting to stand (see p. 24, *TO*). In addition, the 'Mech cannot make physical attacks with its arms.

No Ejection System (2 Points)
Some BattleMechs and fighters—notably the *Spider* and *Lucifer*—lack an emergency escape system. The MechWarrior or pilot can never eject ; i.e. cannot use the *Ejection and Abandoning Units* (see p. 196, *TO* and *Ejection and Abandoning Ship* (see p. 26) rules).

No Cooling Jacket (2 Points)
A weapon's design excludes the standard cooling jacket. As a result, it generates 2 extra points of heat when fired.

Non-Standard Parts (1 Point)
Constructed with non-standard components—such as the *Clint*—it is more difficult to source parts for this unit. When attempting to locate replacement parts, add +2 to the target number.

No Torso Twist (2 Points)
Some 'Mech designs, like the *Bushwacker,* lack the flexibility to twist at the waist (or don't possess a waist to twist). A 'Mech with this quirk cannot torso twist.

Poor Cooling Jacket (1 Point)
A weapon has a badly designed cooling jacket. As a result, it generates 1 extra point of heat when fired.

Poor Life Support (1 Point)
When determining damage to the MechWarrior or pilot as a result of heat following a life support critical hit, treat the unit's heat level as being 5 points higher.



Since this Quickdraw *has been configured with improved targeting at long range, the pilot resorts to a physical attack while targeting a distant foe.*

Poor Performance (3 Points)

The unit cannot jump to maximum speed immediately. It must spend one turn expending MP equal to its Walking, Cruising or Safe Thrust rating before it can use MP up to its Running, Flanking or Maximum Thrust MP the following turn.

Poor Targeting (1, 2 or 3 Points)

The unit has poor targeting capabilities in one range bracket. This quirk can be applied more than once, but can be taken only once per range bracket. All ranged attack to-hit numbers at the selected range bracket receive a +1 modifier. A unit with this quirk cannot take Poor Targeting for Extreme Range.

Poor Workmanship (1 Point)

Not all manufacturers are as dedicated to producing quality products. This unit is one quality step lower than normal. In addition, all rolls for critical damage are modified by +1, making critical hits more likely. Results of 13 are treated as 12 (except if using *Advanced Determining Critical Hits*, in which case do not modify down; see p. 74, *TO*).

Prototype (2 Points)

The unit is a prototype and still has some issues. Its systems are less resilient and lack the redundancy that will be incorporated into the production model. All rolls for critical damage are modified by +2, making critical hits much more likely. Results of 13 or over are treated as 12 (except if using *Advanced Determining Critical Hits*, in which case do not modify down; see p. 74, *TO*).

Sensor Ghosts (2 Points)

The unit's sensor suite projects ghost images, causing significant targeting problems. All ranged attack target numbers receive a +1 modifier.

Unbalanced (1 Point)

The 'Mech's design (such as the notorious *Javelin*) is unbalanced. Treat this quirk as a +1 target number modifier for Piloting Skill Rolls made whenever the 'Mech enters a hex that requires a Piloting Skill Roll due to a building type or planetary condition (i.e. Terrain Type, Terrain Modification and so on).

Un-streamlined (2 Points)

The unit cannot enter or operate in an atmosphere, such as the *Achilles*. If it accidentally enters an atmospheric hex, it is treated like a JumpShip (see p. 63).

Weak Head Armor (Variable Points)

The value of this quirk is equal to the number of armor points effectively lost; for example, a *Cyclops* has 9 points of head armor, but when using this quirk effectively has only 5 armor points, making this a 4-point quirk for the *Cyclops*.

Weak Legs (1 Point)

This 'Mech's legs were never designed to take the stresses involved in physical attacks. When the 'Mech is kicked, or executes a Death From Above attack, roll for a possible critical hit on each leg (even if the armor is not breached) and apply the results.

Weak Undercarriage (1 Point)

The aerospace unit has a flimsy undercarriage that cannot take much abuse. When making a landing, if the Piloting Skill Roll's Margin of Failure is 3 or more, the gear will collapse. The unit takes 50 points of standard-scale damage to the nose (or rear of Spheroid Small Craft or DropShips) and the gear is destroyed.

Bob has decided to spice up his boring old Cyclops *by using quirks. With a Tacticon 2000 Battle Computer, the* Cyclops *is a superior command unit. To offset the weak head armor, Bob adds a cowl, but this makes ejection more dangerous. The arm-mounted Diverse Optics medium lasers have inefficient cooling jackets, and thus generate more heat than normal.*

Positive Quirks
Battle Computer 5
Cowl 3

Negative Quirks
Weak Head Armor 5
Difficult Ejection 1
Poor Cooling Jacket (RA Medium Laser) 1
Poor Cooling Jacket (LA Medium Laser) 1

Feeling lucky, Randall is using quirks with his Clint. *The Sloane 220 Lockover System is renowned for its long-range accuracy, but the* Clint *uses non-standard parts and is difficult to maintain. Its actuators are somewhat exposed, as is the mechanism of its Autocannon/5.*

Positive Quirks
Improved Targeting (Long Range) 5

Negative Quirks
Difficult to Maintain 1
Exposed Actuators 1
Exposed Weapon Linkage (Autocannon/5) 2
Non-Standard Parts 1

Mike's Chippewa *aerospace fighter employs special insulation on its large lasers. However, it is a notorious gas hog that is also hard to pilot.*

Positive Quirks
Improved Cooling Jacket x 4 (Large Lasers) 4

Negative Quirks
Gas Hog 2
Hard to Pilot 2



WAR AND ITS MAKERS

From: David Lear <david.lear@kitteryprefecture.edu>
Sent: 11 April 3072, 21:47 PM (Kittery Mean Time)
To: Devlin Stone <devlin.stone@kitteryprefecture.gov>
Subject: Re: Indoctrination and Training

Dev,

You asked me to compile suitable material to support your recruitment and training efforts. Despite their efforts to eradicate all information not "blessed by Jerome Blake," our former captors missed quite a lot of archived material at Can Fu University. I even stumbled over several terabytes of AFFS data that should have gone to the Kittery Training Battalion back in '28. All of this has proven to be an invaluable source of information, which I have attempted to distill into an easily absorbed summary.

Where appropriate, I have annotated the material to reflect recent developments.

—David

<1 attachment, 2.8 MB>

BULLETS AND BOMBS

No world in the Inner Sphere, Periphery or Clan Space has remained untouched by war. Even the most primitive backwater planets have become graveyards to hundreds, if not thousands or even millions, who took up arms in the name of freedom, honor, revenge, greed or the petty lust for power. Methods may vary, and traditions and perceptions of honorable warfare may occasionally hold greater or lesser importance, but no one is immune to humankind's baser instincts—our almost genetic need to go to war.

As naturally as war comes to us, however, waging it is no simple matter. The time and expense spent on logistics alone would boggle the mind of any armchair general. Keeping even the smallest BattleMech lance in fighting trim requires an investment of vast resources. Nations (even victorious ones) have gone bankrupt while fighting wars. Smart leaders and their military commanders think carefully through every consequence of their actions before engaging in war, and today's interstellar battleground leaves little room for error.

What follows is a general discussion of the main elements of modern warfare, common themes and features of armed conflict today. I hope to touch on all main aspects of this ugly business, from the reasons states go to war (all too many, regretfully) to the tools and tactics used to win one. The universe is an ever-changing place, and the changes are nowhere felt more keenly than on the field of battle. No one tome can hope to capture every nuance of modern warfare.

As with all such matters, none of this material should be considered absolute.

Why People Fight

War, no matter how clean, no matter how honorable, is the single most disastrous occupation in which we can engage, but it is not always an evil thing. Past wars have taken place to secure the liberty of an oppressed people, to defend a nation from certain conquest and subjugation, or to unify a fractured nation and save its collective peoples from decline. In truth, there may well be as many reasons to go to war as there have been wars throughout history. Some erupted over an irreconcilable difference in political views, a clash of mandates that breeds tensions and ultimately conflict. Others were waged out of vengeance, a chance to "even the score" for some injustice, real or imagined. Still others have erupted when a threatened realm acted preemptively, hoping to head off a feared invasion or attack by being first to launch one of its own.

Most wars, however, take place over possessions, whether territory, wealth or resources—all of which more often than not translate into political power. Power, particularly political power, is often the single most influential element in the beginnings of a war. From a ruler desperate to protect his people to a despot seeking to expand his empire, only those with sufficient power can effectively wage war against their enemies. The sheer expense of fighting in terms of manpower and materiel means that most rulers worth their salt will examine all other options before resorting to these drastic measures. The more politically savvy—those who look ahead to the potential outcome of their actions—will even justify the need for war beforehand, removing any moral ambiguity and swaying their soldiers and citizens to rally behind a cause.

Students of history will recognize the concept of a war launched over political differences. Many of these wars involve larger powers, usually through proxy states they hope to dominate with their own style of government or economy.

Wars over resources and the like are another common theme, especially in our era, when some worlds lack the means to sustain themselves or when certain valuable commodities, such as BattleMech factories and JumpShip yards, remain a rarity that entire nations covet. The people living on these worlds are a resource as well, providing skilled labor, more troops to fight and a wider tax base for the government that ultimately claims the right to raise its flag over their heads.

TROOP TYPES

Just as the reasons for going to war are legion, so are the means by which to do so. With regular, irregular and even mercenary assets to draw upon, today's military leaders have more options than ever when confronting an enemy, and the smart ones know when and where to use every one.

BattleMechs



The BattleMech bears the title "King of the Battlefield" and has come to fill almost every niche on the modern field of combat—from speedy scout to lumbering titan bristling with armor and weapons. BattleMechs offer the best possible ratio of firepower to manpower in a modern military unit, a logistical godsend when factoring the investment in human lives and training of the modern warrior. Their cost and need of continual maintenance also make BattleMechs among the most expensive combat elements in widespread use.

[Over the centuries, desperation has prompted more than one individual to attempt to press civilian IndustrialMechs into service as weapon platforms. Lacking the refinements that make a BattleMech what it is, the resulting hybrids can imbue a false sense of confidence. Invariably, commands employing armed IndustrialMechs are notable only for their high casualty rates. —DL]

Conventional Vehicles



For all its flexibility, even the BattleMech can benefit from the support of conventional armored vehicles. Thanks to lower cost, higher availability and ease of maintenance, conventional vehicles are used extensively across known space. However, compared to 'Mechs, armored vehicles are comparatively fragile and lack the same mobility and flexibility.

Tracked, wheeled and hover vehicles are the most common conventional vehicle types. They fulfill a broad range of mission-specific duties, from the ultra-fast scout hovercraft to the common wheeled personnel carrier, to the massive track-crawling batteries of weapons.

VTOLs and conventional aircraft are built for speed as well as cost effectiveness, but can nevertheless provide valuable air support. They are most effective in the fast ground-support or reconnaissance roles.

While still exceedingly rare on the battle field, WiGE (Wing-In-Effect) vehicles can prove very effective in rapidly transporting troops and goods across long distances. Whether these machines will ultimately find a distinct combat role remains to be seen, however.

The preponderance of ground warfare has relegated wet naval vessels to a limited role. Because of the extreme difficulty of transporting them, large-tonnage seagoing vessels long ago gave way to smaller craft, though the occasional 85,000-ton floating fortress may still be encountered on the seas of some far-flung worlds.

Aerospace Forces



Aerospace forces offer the modern commander a powerful supplemental tool on the modern battlefield. Possessing firepower comparable to a BattleMech, the aerospace fighter is far more resilient than its conventional counterpart. Its ability to operate in atmosphere and in space enables a large combat force to cover its approach to a hostile world or battle

THE RULES OF WARFARE

The reasons for wars, and the philosophies of the states that fight them, often dictate the conduct of troops in battle. A war over differing political ideologies, for example, will be fought with an eye toward exemplifying the virtues of each nation's political ideals, hoping to win over the hearts and minds of the most people to a nation's cause. A war of conquest, on the other hand, seeks simply to claim the most territory, leaving the people who live there a secondary concern. On the warrior's level, from the earliest days of organized warfare, the need to codify battlefield conduct has never been far from the minds of those who fight. Concepts of honor, whether chivalry or *zellbrigen*, instruct a warrior on the proper way to do battle, thereby attempting to civilize a barbaric practice.

On the international level, codes of warfare are often written into law, the violation of which can bring commanders to justice for "crimes against humanity." On ancient Terra, such concepts as the Geneva Conventions held sway. Today, similar principles, sometimes unwritten and often derived from the Ares Conventions, serve the same role. In addition to the six following articles of the Conventions that are generally respected, most Inner Sphere and Periphery powers forbid any attack on technology based on Kearny-Fuchida principles, specifically JumpShips (excepting WarShips) and hyperpulse generators (HPGs). Violation of these rules of war or attacking such irreplaceable technologies are widely considered crimes against humanity.

[Unfortunately, the Word of Blake has chosen to throw the rulebook out the window, and they have shown no restraint in employing nuclear weapons, orbital bombardment, chemical and biological weapons. Of equal concern are signs that the Inner Sphere powers (especially the Capellan Confederation) are willing to descend to the same level. —DL]

Article I—Nuclear Arms

The use of any nuclear device or variant thereof on a planetary surface or against any commercial vessel is prohibited. This prohibition extends to tactical nuclear blasts against the aforementioned targets. Controlled nuclear attacks in space against military targets are prohibited unless they occur at a minimum distance of 75,000 kilometers from the surface of any inhabited world in a star system.

Article II—Orbital Bombardment

The use of orbital assets to bombard stationary targets (as defined in Appendix B, Section 4) on a planetary surface, with the single exception of a valid military objective whose destruction the attacker deems necessary to ensure the survival of his own troops,

zone. Like 'Mechs, aerospace fighters are comparatively expensive compared to conventional atmospheric craft and VTOL vehicles.

Space Navies

Spaceborne naval assets cover large vessels, from DropShips and JumpShips to the mammoth WarShips. Essential for transport to and from a battle zone, as well as between star systems, interstellar wars cannot take place without these valuable craft.

DropShips are vital for JumpShip-to-surface transport (and vice versa), and fill a broad range of mission roles, ranging from simple cargo supply ships to massive assault craft. Many DropShips mount an impressive array of weapons to augment their accompanying aerospace fighter screens.

[Recently the "Pocket WarShip" concept has emerged. These DropShips are armed with weapons normally reserved for WarShips. Comparatively lightly armored, these vessels represent a major threat to other DropShips and even light WarShips. —DL]

JumpShips are the backbone of any fleet. They are prized for their ability to travel through hyperspace, delivering their cargo of loaded DropShips across the interstellar gulf. However, their light armor, minimal weapons and poor maneuverability leave them vulnerable between jumps. During the Succession Wars, facilities to manufacture JumpShips were virtually annihilated. In response, most powers (the Clans are the notable exception) consider attacks against any JumpShip as a crime against humanity. However, as the Inner Sphere recovered the technology to rebuild their shipyards, attacks on JumpShips began again.

In the days of the first Star League, the Inner Sphere could field fleets of heavily armored, massively armed and highly mobile military JumpShips known as WarShips. Unlike the JumpShip, the WarShip did not survive the Succession Wars. *[ComStar had their secret fleet, of course. —DL]*. The WarShip returned to the Inner Sphere with the arrival of the Clans. The reappearance of these destructive leviathans triggered a desperate arms race as the Great Houses used rediscovered knowledge in crash construction programs.

WarShips are the single most expensive part of any realm's army, with the average vessel worth the annual Gross Planetary Product (GPP), and their planning and construction takes years from beginning to end. Even today, only a handful of shipyards can construct and maintain these leviathans.

Too expensive to build in numbers, and often considered too valuable to risk, the role of the WarShip in modern interstellar campaigns remains limited.

[Of course, the Word of Blake does not exercise the restraint we have seen from the Clans and the Great Houses. For the Clans, it was a matter of honor to overcome their opponents in glorious battle, and the terrible destruction of the Succession Wars prevented the Inner Sphere from employing orbital bombardment wholesale. —DL]

Infantry



Any planet can boast an infantry defense force drawn from the local population. In addition, despite the awesome power of BattleMechs and armored vehicles, the standard foot soldier remains the backbone of modern military forces. The benefits of infantry to a modern army are the relative lack of expense involved in training and equipping a cohesive infantry force, as well as the

is prohibited. In no case may any orbital attack take place in or near any heavily populated area, and any orbital attack is subject to ex post facto review by a duly appointed council from the signatory states.

Article III—Surrender

To lessen the human cost of warfare, all combatants must accept the surrender of any unit that offers it. A white flag (or similar object displayed in the same manner as a flag) adorned with a red "S" will represent the universal surrender standard, so that any unit unable to communicate by conventional means may still surrender freely. The universal surrender guidelines in Appendix E outline the provisions for the fair treatment of prisoners and fair compensation for the capturing forces upon the release of war prisoners to their native realms.

Article IV—Safe Passage

The governments and military commands of the undersigned agree to recognize the aforementioned white flag and its red "S" as a symbol of truce. Any vessel or vehicle or person bearing such a truce flag shall be granted safe passage through any place, insofar as the bearer breaks no law pertaining to that place, or initiates no hostile activity of any kind. Should the bearer of a truce flag engage in hostile activity as defined in Appendix F, the truce flag shall be deemed invalid, and any action taken against such an individual or individuals becomes the responsibility of those suffering said hostile action. Harassment of a truce flag bearer without provocation will be investigated by a duly appointed board of inquiry from the signatory states.

Article V—Urban Warfare Restrictions

No battle shall be waged in an urban area except under extreme circumstances. If the military objective of an assault lies in a city center, attacking troops must ensure that any hostile action taken causes the least possible amount of collateral damage. No attack may be made against a civilian target, for any reason. Civilian targets shall be deemed to include such life-supporting equipment as water and air purifiers, agricultural assets, or any other item that enables a planet's population to continue their existence.

Article VI—Chemical and Biological Weapons

Because chemical and biological weapons kill human life indiscriminately and often permanently damage the biosphere of any world suffering such an attack, the use, further development and production of such agents are strictly prohibited.

MERCENARY REVIEW AND BONDING COMMISSION

The creation of the Mercenary Review and Bonding Commission (MRBC) on Outreach filled the vacuum created by the dissolution of the ComStar Mercenary Review Board.

Intended to ensure fair employment conditions for mercenary forces, the commission also enforces a code of conduct among all MRBC-registered units. When heavily armed mercenaries break the law, local law-enforcement agencies can find themselves outgunned and unable to act. House troops can usually deal with these unruly hired guns, but it is often simpler for an aggrieved party to take its case before the commission.

With the reputation of all MRBC-approved units at stake, the Bonding Commission can be severe in handing out punishment to the guilty. Fines or bans from accepting MRBC-brokered contracts are typical. The commission also uses the threat of action to induce mercenaries to hand over guilty individuals for trial and punishment. On occasion, the MRBC puts a price on the heads of mercenaries who have gone rogue.

[All mercenaries who accept contracts with the Word of Blake are automatically labeled rogue commands. —DL]

sheer quantity that can be raised from a local population. Infantry is extremely vulnerable to modern heavy weapons on an open battlefield, and requires support from armor or 'Mechs. However, infantry troops remain the only force capable of effectively securing and holding an objective.

Modern infantry can field the Clan-born innovation of battle armor. Now available in a variety of mission-specific configurations, these forces give conventional foot troops the mobility and firepower to menace even a BattleMech. Unfortunately, battle armor squads are more expensive to raise and maintain.

Elite Special Forces infantry are highly skilled and flexible infantry employed for high-priority assignments that emphasize stealth over brute force. They are expensive to raise, train and equip, and too valuable to deploy in a standard order of battle. The smart commander can snatch a victory from the jaws of defeat by wisely deploying Special Forces against key targets.

Non-Standard Troops



Beyond the type of equipment used, commanders must also determine the nature of those troops who serve under them. Equipment alone does not win battles, and the smart general knows how to factor the value of all these expensive arms against the experience, loyalty and dedication of those who use them.

Most military leaders prefer to use their own forces, raised, trained and equipped by standards they are intimately familiar with and know they can count on. Political and military realities, however, often force reliance on non-conventional troops to secure a battlefield objective. These realities, and the use of such non-standard assets, can factor into the tactics and strategy of any campaign.

Finally, Clan Smoke Jaguar debuted the half-'Mech-sized ProtoMech in 3060 as a way of stretching their meager supplies. The theory is that a Point of five ProtoMechs working in concert could equal a 'Mech in battlefield effectiveness and yet the total resource allocation for the five ProtoMechs would be less than the 'Mech in question. At the same time, they offer greater mobility and superior firepower to battle armor, securing their niche. Piloted by aerospace pilots that interface with the machines using the Clans superior enhanced imaging technologies—that allow the pilot to literally "plug into" the ProtoMech—the ultimate success of this machine is still undecided. While most Clans field some ProtoMechs, very few have truly embraced this new, unusual military unit.

Mercenary Troops

Almost as long as organized warfare has existed, some soldiers have fought purely for profit. Mercenaries, willing to assume the burden of another realm's war for the chance to earn wealth and sometimes fame, have gained employment in wars as far back as 2300 B.C.E., supplementing the strength of regular armies in times of crisis.

The use of mercenary forces allows a realm to take advantage of experienced troops without worrying about the need to feed, train or equip them, while allowing the realm to reap the benefits of their battlefield experience for only as long as needed.

Today, mercenary forces can be found for every budget and specialized for any conceivable combat role, from a simple team of infiltrators to a massive planetary assault force. Most significantly, the use of mercenaries provides a realm with a degree of political protection for undertaking military action against its neighbors. By removing House forces from a battle zone, a political leader can preserve his own troops and his own people's goodwill while still settling a score with a rival state.

Of course, for all their advantages, mercenaries also come with significant disadvantages. The temporary nature of their employment can often deprive the realm employing them of their experience in the event another emergency develops. This transience also brings with it perpetual uncertainty about a mercenary command's loyalty. As professional soldiers, motivated by money rather than politics, the typical mercenary force is only as loyal as their next paycheck or the terms of their contract, and the unscrupulous are just a hefty bribe away from defecting to the other side.

The wages a mercenary unit can demand typically depend on their experience and equipment; cheaper forces tend to be less effective ones. For the potential employer, *caveat emptor* ("let the buyer beware") is an axiom not just for good business, but good strategy as well.

Irregular Troops

Another kind of irregular combat force typically takes the form of locally raised, nominally friendly guerilla fighters. In fact, any local opposition force may be counted as part of a combat commander's irregular troops. Such troops can be a huge help when attempting to secure a major objective, up to and including entire worlds, and are inexpensive to raise because many of them are disgruntled members of the enemy's own civilians or military. Unfortunately, as a fighting force irregular troops offer in dedication what they frequently lack in training, firepower and numbers. Their intimate knowledge of the local terrain, the enemy and

his tactics can prove invaluable, however. A smart strategist is wise not to rely too heavily on these non-standard forces. Hard to control once battle is joined, they are motivated by their own agendas and ideals.

Perhaps the most successful example of irregular troops are the Free Worlds League Liberation Units.

[Our own efforts started with the use of "irregular troops," of course. A crucial difference was the access we had to the large pool of trained combat veterans, which the Blakists (in their wisdom) chose to incarcerate at McKinley Ranch (RBMU 105, as the Blakists called it). Historically, few irregulars have been as well trained and motivated. —DL]

BATTLEFIELD TACTICS

The first lesson one learns about battlefield tactics is also the most ancient law of combat: No plan survives first contact with the enemy. There simply are no hard and fast rules of warfare, no guaranteed "checkmate" maneuvers that can assure one side or another of a lasting victory. Field commanders should be aware that war is not a simulation. The enemy forces are not computer programs with set algorithms and subroutines, but human beings, and often damned creative ones at that. Therefore, the following section is not dogma, but merely a guide to tactics that normally work in the field, all things being equal.

Combined Arms

Almost universally considered the most effective battle formation, the combined-arms force has a composition that permits commanders the widest possible range of applicable capabilities for the battlefield. By combining arms, complementing the capabilities of some elements by deploying others in support, the strengths of the various fielded units overlap one another while downplaying or counteracting weaknesses.

The ideal combined-arms force employs a healthy mix of BattleMechs, conventional armor, infantry and air support. Specific environments can require the addition of specialist units, such as wet navy elements.

Air Support

Though BattleMechs offer unparalleled capabilities on the ground, even the "king of the battlefield" must be wary of enemy air support. The speed and precision of air raids can deliver intensive firepower where a commander needs it most, and on short notice. The only effective counter to a good aerospace fighter is another one. Moreover, air power can provide vital intelligence, locating key enemy positions, pinpointing artillery positions, command centers or flanking forces.

The force that attains domination of the skies gains a significant advantage, whether this occurs through the use of aerospace fighters, conventional fighters, or even VTOLs. If it can then neutralize the enemy's air power, the dominant force claims air supremacy—uncontested control of the skies—and can deliver devastating attacks with near impunity.

Artillery and Fire Support

Another often-discounted element in the modern combined-arms TO&E is the dedicated artillery or fire support unit. Artillery represents an effective tool for delivering sustained fire with minimal risk of counter-fire. Ideally suited for stand-off attacks against slow-moving targets and static emplacements, artillery can provide commanders with the means to suppress an aggressive enemy force, slowing their advance and giving much-needed time to regroup and counterattack.

A heavy dependence on ammunition supplies, an inability to engage faster-moving targets or enemy units that manage to close in, and a reliance on forward observers and spotters are the major weaknesses of artillery.

Urban Warfare

Urban warfare is the nightmare battleground that every commander must face sooner or later, and one of the most unfortunately common occurrences in modern times despite the Ares Conventions. Abhorred by the Clans and right-thinking Inner Sphere generals alike, desperate commanders nonetheless fall back on urban warfare most often when their defensive lines collapse and they are in imminent danger of being overrun.

In an urban setting, combat invariably occurs at close quarters, where 'Mechs and vehicles lose the advantage of their superior mobility and much of their long-distance firepower. Infantry comes into its own on the urban battleground, able to move across the landscape of buildings with greater ease than the mighty BattleMech. Infantry's ability to clear, seize and hold objectives in a city, virtually masked by the presence of so many buildings, allows them to quickly attain ideal ambush positions and provide cover fire for friendly tanks and 'Mechs.

Naval Warfare

An uncommon venue for modern warfare, naval combat nonetheless can and does occur on worlds where major objectives are coastal or submerged offshore. Because this area of battle is so rare, it is often discounted in strategic warfare. Victory favors the force that can amass the greatest number of naval assets, usually supported by significant airpower and limited 'Mech units. However, even a force with sea superiority must bow before a suitably equipped ground or air force that can seize or destroy all the key harbors and refueling points on which these vessels rely to retain their advantage.

Oddly enough, most significant "sea battles" have actually occurred underwater, thanks to the submergibility of BattleMechs. House Davion even took this concept to the extreme on several key worlds with submerged command bases protected by subs and 'Mechs

Space Warfare

Before a ground war can begin, the troops must first get to the planet. In many cases, such attack groups are rarely contested, but around major worlds or any other planet capable of raising a sizeable aerospace defense force, combat in the depths of space becomes almost a certainty. In such an event, aerospace fighters, DropShips and even the occasional WarShip can mean the difference between life and death before and after the ground combat phase.

Aerospace fighters commonly see use during space missions, forming an advance defense screen for DropShips in transit to and from the local jump point. Faster, more

CLAN VS. INNER SPHERE

No discussion of modern tactics would be complete without addressing the tactical situation faced by Inner Sphere troops against the Warriors of Kerensky. Following their surprise arrival, the Clans struck fear and hatred into the hearts of the citizens and soldiers of the Inner Sphere, not just for their alien customs and formidable firepower, but also for their almost inhuman efficiency and ritualized approach to war.

Though it would be foolhardy to assume all Clan warriors behave the same way in combat, many lingering traces of the Clans' style of warfare remain evident today. The first and most critical of these is their continued insistence on what they consider a "fair fight." Clan warriors claim greater honor—and opportunities for advancement—by winning a battle with the minimum amount of troops, a practice that reduces their risk while increasing their standing in their martial society. These same principles also lead them to prefer fast, open field engagements, to quickly resolve the fighting and to eliminate the risk of collateral damage near their objectives.

The ritual combat form of *zellbrigen*, for example, where each Clan warrior selects a single target and attempts to bring it down before choosing a second or a third, has increasingly vanished from Clan rules of engagement. Against the Wolves and the Ghost Bears, Inner Sphere troops may find some elements destroyed by massed weapons fire, and the particularly honorless may even be gunned down while withdrawing from the field of battle. Against the Falcons, commanders are more likely to see the dueling rules still in force, but the Falcons' tolerance for even the slightest perceived violation of these rules will prompt the same "grand melee" tactics the Wolves have embraced.

Among themselves the Clans use a bidding process known as the *batchall* to set the terms of each engagement. In the early stages of the invasion, they used the same process against Inner Sphere forces, until cunning Inner Sphere strategists turned the *batchall* against them. Since then, few of the Invading Clans will invoke the *batchall* or accept bids from other forces. They may still follow such traditions when faced with the most honorable opponents, though run of the mill commanders cannot expect Clan units to act in a predictable manner.

Inner Sphere commanders expecting to face Clan forces in battle must be aware of the particular habits of the Clan they are facing in order to prepare for any "unClanlike" adaptations the opposing forces may have made to Inner Sphere tactics. Commanders should keep in mind, however, that the Clans are not robots or computer programs. Some can be every bit as crafty as an Inner Sphere tactician in battle, and this number rises every time an Inner Sphere force commander demonstrates a disregard for the Clan rules of warfare

maneuverable and harder to hit than the DropShips they protect, aerospace fighters are limited only by their relatively small fuel reserves and correspondingly short endurance. Aerospace fighter wings are generally deployed only when combat is expected, or as a combat patrol around a relatively stationary objective such as a recharging JumpShip or a space station. Opposing DropShips and WarShips is another role for aerospace fighters, albeit one largely considered a suicide mission without support from heavier units.

DropShips fill a variety of mission roles, but most simply serve as transport for a combat force. In space battle tactics, transport DropShips often become favored targets because they deliver the true threat in-system, often hauling 'Mech regiments a battalion at a time.

WarShips are the most fearsome creations to sail the void. Mounting massive capital weapons, orbiting WarShips can even add their considerable firepower to a surface battlefield. Thankfully, WarShips are a rare sight.

STRATEGY

Every battlefield victory is only part of a larger campaign, and most field commanders are only familiar with their own sliver of the larger conflict, be it a battle for a city, a hill or a fortification. The overall campaign, however, begins even before an attacking force's JumpShips arrive in a target system, and for larger objectives—for example, the conquest of an entire world—large-scale strategy rather than small-scale tactics will win the war.

OBJECTIVES

The first elements that must be considered in any campaign are its key objectives. In a simple military objective or extraction raid, the target is typically a single facility, command center or group of warehouses, where the valuables to be captured or destroyed reside. By seizing or eliminating these objectives, the attackers win and must then quickly and safely withdraw before reinforcements can arrive from elsewhere on-planet or outside the system.

Larger campaigns, however, must consider a far broader picture. Winning a planet, after all, is not simply a matter of smashing an enemy base here and there, but securing military control over the planet's main arteries of military and civilian activity. Successfully identifying and dealing with all of these elements is the hallmark of the wise campaign commander.

PLANETARY ASSAULTS

A key element in any planetary-level campaign is getting troops to the surface safely and quickly while raising a minimum amount of alarm. As briefly discussed above, accomplishing this task entails a great deal of planning, and the campaign begins even before the jump into a target system.

The Jump-In

Determining the arrival of an assault fleet in space is a critical first step and should be weighed based on advance knowledge of the system's defenses and level of alarm. For example, arriving at a nonstandard ("pirate") jump point close in can give the assault force commander a shorter transit time, but leaves the system's main travel points—usually occupied by picket forces and the occasional recharge station—unsecured against reinforcements. Seizing these facilities first by arriving at a standard zenith or nadir point may secure valuable assets as well, such as additional JumpShips, supplies and the like, but risks alerting the planet prematurely to the presence of an invasion force.

Orbital Superiority

Once in-system, an assault force must make its way to the planet without losing its ground troops to any interception by the enemy. Typically, an assault force employs its aerospace elements as a defensive screen, but those equipped with assault DropShips or even WarShips can further guarantee their survival to D-Day (Drop Day). Upon reaching orbit, attaining orbital superiority by using these assets to clear any orbital defense forces around the target becomes the campaign commander's next priority. Until these assets are cleared or at least contained, dropping troops will be at risk.

After attaining orbital superiority, many commanders use their remaining aerospace assets to try to clear away surface radar stations, communications centers and even enemy staging areas near the intended landing zones of the attack force. This tried and true technique, however, tends to place the attacking air support elements at higher risk. To mitigate this problem, some invaders deploy covert troops in advance of this phase, delaying their final drop time long enough to gather reliable intelligence on the surface situation before sending in unsupported aerospace elements.

D-Day

Once the attacker has cleared away all major opposition, assuring a safe drop and a fairly safe departure should the invaders' mission fail, the final invasion of a target world can begin in earnest. Assault troops can land on a planetary surface by making a standard landing in a designated secure (or "safe") landing zone (LZ) or a combat drop into an unsecured ("hot") drop zone (DZ). The former tactic allows campaign commanders to minimize risk during the landing, but also gives an enemy more time to prepare defenses and call for help. The latter enables commanders to hit key objectives quickly, though at significant risk to equipment and personnel. The ideal landing zone for an attacking force is any spaceport large enough to accommodate DropShips and supporting craft, offering refueling facilities as well as a flat, blast-proof and stable runway on which to set down. Failing that, in most cases any stretch of clear, relatively flat terrain will do, though DropShip captains who land in open fields invariably risk an awkward shift as their multi-thousand-ton vessel settles into the softer earth, possibly complicating future takeoffs.

Commanders who land far from any major military objectives can often rest secure in the knowledge that they are likely to meet few—if any—defenders in such isolated areas. Setting down in this type of landing zone allows them to deploy forces before the enemy can muster a response. This approach also draws less fire than a combat drop toward the invaders' transports, which become extremely vulnerable once they hit atmosphere.

Despite its dangers, the combat drop enables campaign commanders to take out major objectives swiftly, denying the enemy a chance to mount an effective defense. In the standard combat drop, the attacking force exits an inbound DropShip as it passes close to the objective, using booster thrusters or integral jump jets to slow their descent and then hitting the ground running like combat paratroopers. This operation puts the inbound DropShip and its dropping troops at risk from surface-to-air defenses and any aerospace elements the defenders may have held back. Alternatively, an orbital combat drop keeps the attacking force's DropShips out of harm's way by releasing the troops while still outside the atmosphere. The dropping troops, encased in ablative cocoons for safe transit, remain vulnerable to enemy counter-fire and aerospace attack.

In the avalanche combat drop, another variation on the combat drop principle, the attacking forces drop directly atop the objective rather than a short distance away. This method exposes the incoming forces to the very heart of the objective's defenses, but can also shave critical minutes off the enemy's time to adjust and places attacking forces right in the defender's midst.

The Ground War

Once the attacking force is on the ground, depending on the circumstances, the most critical phase of the campaign unfolds over the next day or so. Cautious assaults where the DropShips first set down and secure a home landing site gain the advantage of establishing at least a rudimentary logistics chain for the invaders' benefit. More aggressive combat drops, on the other hand, will presumably overwhelm the enemy defense forces at several key locations, and may even reap the added benefit of throwing local defenders into a panic. Of course, this makes it easier to land invading DropShips at a secured zone of the attacker's choosing. Because both methods entail some degree of risk, many planetary assault forces in the past have broken down their battle groups to perform both combat drops and secure-zone landings, enabling them to secure a relatively safe base of operations while simultaneously taking out key elements of the local defense. Once a field command center is established, regardless of the methods used, the invasion becomes a matter of quickly locating and eliminating or capturing the enemy's primary defense forces, command and control centers, and other objectives that have military value. In addition, scouting forces, typically consisting of light 'Mechs, aerospace fighters, covert troops or other recon elements, are deployed to identify major political or industrial objectives, so that follow-up attacks can quickly secure these centers and any other military objectives not previously accounted for. For the defenders, countering a planetary assault of this nature is a matter of maintaining as much force cohesion as possible and getting word out for reinforcements. A defense force that holds out for as many as six weeks stands a good chance of being relieved by troops from a neighboring world. For this reason many defenders overwhelmed by an initial attack may break into smaller forces and turn toward guerrilla tactics to harass and weaken the invasion force. Unless such resistance cells can be quickly crushed, an invasion commander risks not only the further weakening of his command, but also rising popular support that can lead to increased resistance through strikes, sabotage and even terror campaigns.

THE ART OF WAR

Victories take place on the field of battle, but in reality the outcome depends on matters decided long before the first shot occurs. The preparedness of troops to face the enemy depends on a network of interlinked factors. Lack of food and ammunition, equipment in poor repair, the combat environment, all can hand a talented leader an ignominious defeat. A wise commander therefore does not neglect the often tedious subject of logistics.

LOGISTICS

The dictionary defines logistics as "the military science concerned with the transport, quartering and supply of troops." Failure to master any one of these three concerns can render a unit combat-ineffective just as easily as enemy action.

TRANSPORT

No matter how skilled or powerful a force, it is of little value if it is in the wrong place. Transport assets—interstellar, interplanetary and surface—are therefore vital to the prosecution of warfare.

Interstellar Transport

The ubiquitous JumpShips (and rare WarShips) remain the only means of FTL (faster than light) travel. Infuriatingly, the dual limitations of recharge time and the requirement of jump points negates the ability to travel light-years in an instant. Recharge stations at regular jump points or expensive lithium-fusion batteries can speed a JumpShip on its way, but there still remains the time-consuming process of traveling from jump point to planetary surface.

Interplanetary Transport

Early interstellar vessels were inefficient; maneuvering from jump point to planetary orbit and back, consuming precious fuel moving the massive K-F drives around in the process. The development of the DropShip-JumpShip combination revolutionized interstellar travel, slashing turn-around times between jumps and expanding cargo capacity.

Surface Transport

The fastest way to move personnel and cargo over long distances is aboard a DropShip. When sub-orbital hops are not an option, fighting forces must use local transportation networks (roads, rail, maglev, surface shipping, even draft animals). Maintaining secure lines of supply in hostile territory can sap a command's strength.

BattleMech fusion engines mean that their endurance is limited only by that of the MechWarrior. Likewise, fusion-powered ground vehicles have no range restrictions. Aerospace craft (which consume reaction mass or hydrocarbon fuel) and vehicles powered by I.C.E. power plants introduce the problem of maintaining a steady fuel supply, stretching supply lines to breaking. It is worth noting, however that modern I.C.E are more efficient then early Terran designs, and military I.C.E.'s are able to consume almost any kind of fuel from gas to bio diesel to 120-proof alcohol. The use of alternate engines in support units (such as fuel cells and solar) help reduce the voracious fuel demand of a modern military. Finally, infantry can always walk, but what they can carry on their backs will erode their endurance and morale.

SUPPLY

Supplying even a small unit can be a mammoth undertaking. Food and water are priorities, but it will rapidly become combat-ineffective without ammunition, spare parts, medical supplies, clothing and a host of other consumables. BattleMech technology offered the Terran Hegemony the key to maintaining dominance in the Inner Sphere's military and political arenas. With the 'Mech, the Hegemony created a combat force that was easier to transport and required less logistical support than an armor or infantry formation with equivalent firepower.

Food

An ancient Terran leader once observed that an army marches (figuratively) on its stomach. Depending on temperature and gravity, the average soldier burns between two thousand and seven thousand calories a day. Supplying those calories is a task with which armies have struggled for millennia.

Irregular forces can survive by foraging, but even the smallest regular force will rapidly strip an area. Permanent installations, DropShips or even simple military chuck wagons can supply troops' needs, but fresh foodstuffs are too bulky and heavy. Personnel can subsist on a combination of energy pills, dermal nutrition patches and vitamin supplements for a short time, but this situation is never popular with troops. A good commander tries to avoid the sapping of morale that accompanies an empty stomach. Troops in the field subsist on compact ration packs that differ from military to military. The ration pack is a light and compact food package that offers soldiers up to 4000 calories per pack and can be stored for years. Despite intensive efforts from some militaries, few ration packs are ever appreciated for their cuisine. Each can supply around fifteen hundred calories and can be stored for up to twenty years.

Water

The biggest headache for any force is securing an adequate supply of clean water. The average person requires between four and seven liters of drinking water each day. Water loss depends on environment and activity level. Personal hygiene requires a minimum of seven liters a day (Lyran generals have been recorded as using upwards of seventy-five liters). If troops are not subsisting on field or combat rations, food preparation requires at least another twenty liters. Finally, for any sanitation beyond using a shovel, twenty to seventy-five liters per person can be flushed away. Even with the best recycling technology, water reclamation never reaches one hundred percent efficiency. Access to local sources is vital to maintain a unit as a fighting force, and during the Succession Wars water was often the objective of military campaigns. If local water sources are chemically or biologically tainted, purification equipment is added to the list of things a force must bring with it. The individual can use personal filters and purification tablets, but a permanent or semi-permanent base requires a large and reliable source.

Water supplies can be a critical weakness for an enemy to exploit. During the Fourth Succession War, the Fifth Sword of Light poisoned the main water supply for the city of New Lanark on Northwind. Ptomaine poisoning killed five thousand civilians and reduced the Fifth Deneb Light Cavalry to half strength.

Life Support

For every world like New Avalon, there is a hostile one like Sirius V or Defiance. Extreme pressures and temperatures or biological or chemical taint can combine to make the atmosphere unbearable. Even oxygen can be poisonous in high concentrations. Filter masks, air tanks or environmental suits allow troops to operate in these conditions, but place an even greater burden on supply lines. BattleMechs and battle armor have their own life-support systems, but these must be maintained.

Though the Clans have the technology to surgically modify themselves (so called gene-forming) to live in hostile environments, they consider it anathema to do so, preferring to leave evolution to its own path. However, persistent rumors exist that such extensive physical modifications do occur among the Clans' Dark Caste.

Medical Supplies

A military unit needs a complete spectrum of medical supplies, even when not in combat. Medical facilities must be maintained, consuming water, detergents, anti-bacterial and antiviral agents. Likewise, predicting with absolute certainty the day-to-day medical needs of personnel is impossible, and so medical teams must maintain stocks of a wide range of drugs and other consumables (most with finite shelf-lives).

Clothing

Every member of a unit, combatant and non-combatant alike, requires a bewildering array of clothing. Artic, jungle and desert clothing are rarely suitable in other environments, and during a campaign a soldier could find himself in all of these environments. Accounts of the campaigns that failed because troops lacked suitable clothing could fill volumes. Clean and dry clothing is not a luxury. Something as simple as not having a dry pair of socks to put on in wet environments can seriously affect a soldier's health.

Ammunition

A Defiance Hammerfist heavy Gauss rifle becomes eighteen tons of scrap metal without ammunition. Next to food, spare parts and fuel, an army runs on a mountain of ammunition. While the prevalence of energy weapons can lessen this impact, they are not the 'end-all' weapon, leaving all too many tactical situations requiring ammunition-consuming weaponry. Ammunition dumps and supply convoys are targets of choice for a commander wishing to weaken an enemy.

Conventional and armored infantry can be equipped with a mind-boggling array of small arms, support weapons and explosives. Even MechWarriors carry personal sidearms.

Spare Parts

Natural wear and tear represents a constant drain on supplies. BattleMechs and vehicles have evolved into designs that use many standardized components, but other components require alteration to shift between designs. The arm of a *Hatchetman* cannot be replaced with one from a *Vindicator* without significant modification, though some subcomponents may be used by another model of 'Mech.

The OmniMech—that creation of Clan genius—promises a unit unparalleled flexibility, but only if the supply of parts with which to reconfigure them exists.

Other Consumables

The list of items an army needs is almost endless. Without fuel, I.C.E. engines and aerospace assets cannot function. Even fusion-powered vehicles and BattleMechs need the correct lubricants for their operating environment, and using the wrong type can have dire consequences.

Logistics does not end when the troops have been fed, watered, clothed and sheltered. Other incidental items are still required: paper for hardcopies, insect repellent, soap, toothpaste, toilet paper and many other items, all of which must be stored, transported and distributed.

The hulls of Clan spacecraft and the shells of their battle armor use the near-magical substance HarJel to seal breaches. Previously available only from Clan Space, HarJel until recently could be obtained in the Inner Sphere only via incredibly long supply lines. The discovery of a similar compound in the Twycross system has solved that problem, though Clan Diamond Shark's continued near-monopoly of the substance ensures that the price remains high.

COMMUNICATIONS

As troops fan out over a planet, and indeed over several planets in an interstellar campaign, communication across these distances between all levels of command also becomes a tricky element to manage. On the grand strategic level, reliable communications are critical not only to relay intelligence and issue orders, but also to maintain campaign coordination and a cohesive chain of command. Ideally, any command during a military operation—whether tactical, strategic or grand strategy—should have established many secure lines of communication well in advance, and should actively work to disrupt the enemy's communications networks. Some strategists, however, prefer to leave some enemy channels open, for possible later negotiations to end a conflict and also to maintain a flow of intelligence and feedback. The ability to listen in on enemy communications is one of the best intelligence advantages an invasion force can obtain, enabling commanders to determine in advance what their opponents' plans are while helping them gauge the results of any action taken against them.

A solid and uncompromised communications network plays a vital role in maintaining the chain of command. This network allows campaign commanders to communicate orders to their subordinates, assigning objectives, issuing directives and coordinating the actions of several disparate units working toward a single goal. If enemy forces compromise command channels, however, this same network can tip off the enemy to the attackers' plans, or can be turned against a campaign command to shatter its force cohesion and plunge the various units into chaos. It therefore becomes as important to safeguard the communications network—whether planetary, interplanetary or interstellar—against hostile tapping or interception. To accomplish this, all orders are issued only through select channels, and then only in codes used by a given command link. Such measures help mask orders and frustrate enemy intelligence efforts.

Unfortunately (or fortunately, in some cases), as the campaign gets bigger, the task of commanding all its aspects, including logistical and battlefield needs, becomes virtually impossible. Communications failures (up to and including ComStar interdictions) may crop up at any time, forcing field commands to operate independently. In anticipation of events like this, many field commanders may be briefed on the overall objectives for which they will be held responsible, so that in the event of communications failure or evidence of a compromised network, these commanders may assume the initiative and handle their operations as they see fit. Allowing commanders their own initiative over the campaign directives is a dangerous but necessary part of grand strategy. On the one hand, it places a great deal of power in the hands of trained officers whose decisions can lead to innovative tactics and ultimate victory. On the other hand, a particularly uncreative field commander might simply decide to wait for new orders, paralyzed with indecision—or worse,

may act rashly, causing or sustaining damage far in excess of what could reasonably be expected of his units otherwise.

All in all, the integrity of a well-run interstellar campaign is tied to the security and stability of its logistical, transportation, command and communications networks. If any of these elements fails, the entire campaign is at risk. Always remember that your enemy may be just as smart as—if not smarter than—you, whether you face him across the field of battle or the gulf of interstellar space.

[Thanks to the efforts of the Blakists, interstellar communications have become increasingly unreliable. Assuming the message gets though at all, there remains the danger that its contents have been altered or intercepted by one of their ROM agents. Thus, even heavily encrypted messages must be regarded with a degree of skepticism. —DL]

ADMINISTRATION

Most information is stored electronically, but the ancient term "paperwork" still applies to administrative tasks. The Clans' martial society allows them to operate a very lean administrative arm. In comparison, the Inner Sphere militaries can be bloated with a phantom army of bureaucrats that outnumbers the fighting arms. The Lyran state in particular has long been plagued with a top-heavy administration that spawned the troublesome "social generals." In the past, the Free Worlds League military also suffered from officers who owed their rank to political or family connections rather than to ability. Even the most talented commander cannot expect to rise far without having a fair grounding in administrative tasks. Though the Clans do not officially test for such abilities, a Star Colonel can expect a challenge to his position if he neglects such duties for long.

There is no escape from the drudgery for the mercenary; without competent administration a mercenary unit will soon find itself bankrupt. Indeed, bankruptcy rather than destruction on the battlefield causes the demise of many mercenary units.

SHADOW WAR

While soldiers and military hardware are the aspects of warfare that most capture the popular imagination, and the art of logistics is the insiders' secret province, all of these are impotent in the face of the most intangible variables: information and perception.

Without information about an enemy's dispositions and capabilities, it is extremely difficult, if not impossible, to plot an effective strategy. Likewise, the absence of feedback as to the state of an opponent's resources, forces and personnel makes it more difficult to plan operations effectively. Without knowledge of a target's or unit's status, it may be necessary to strike them numerous times to ensure their destruction, even if the first blow proved decisive. Overestimating the strength of an opponent ensures victory but can waste resources. Underestimating their strength, while not always a fatal error—reinforcements can be brought in or missions rescheduled—will in most cases result in greater friendly casualties. Bringing just the right amount of force to bear at the right time and in the right place, making the best use of available resources, requires up-to-date intelligence and analysis. In the same vein, even the strongest military cannot overwhelm a planetary population without a degree of influence over that population. Military forces must therefore establish ties with local communities and persuade the people to assist their efforts, or at least not to hinder them. An invading army can crush another army but cannot compel civil compliance without risking major loss of life. Managing public perceptions, in particular the media, is an essential tool in the commanders' arsenal.

MILITARY INTELLIGENCE

Intelligence gathering and analysis is perhaps the single most important task that faces a modern military, employing a wide range of methods to gather information on an enemy's location, condition and intentions. It occurs on a variety of levels, but most commonly at the national and tactical. The three broad categories of intelligence are human intelligence, signals intelligence and research and the media.

Human intelligence (humint) relies on people as a source of information, either spies working among the enemy or agents (willing or coerced) from the local population. Humint provides immediate information in a clear context, but is restricted by the locale and capabilities of the source. For example, an operative in the enemy's general staff can provide superb strategic military data but will be of little value when examining events on a single world or in a field such as economics or technology. A wide range of techniques exists for undertaking and countering humint operations, and so intelligence agencies find themselves locked in an ever-escalating war of espionage and counter-espionage.

Signals intelligence (sigint or elint, meaning electronic intercepts) shortcuts the information flow within or between enemy groups. In most cases, it involves listening to enemy communications, usually requiring intense decryption efforts and analysis of the results, particularly as the context of the communication may be unclear. Here too, a never-ending "arms race" exists between those who want to keep their communications secret and those who wish to eavesdrop, with increasingly sophisticated encryptions targeted by increasingly diverse methods of code-breaking. The biggest problem facing sigint is the formal neutrality of ComStar and the Word of Blake, which imposes considerable difficulty when attempting to tap into interstellar communications. Fortunately for the Great Houses, this problem is not insurmountable. The Kearny-Fuchida principles at the core of HPG technology involve a degree of electromagnetic propagation that sufficiently well equipped agencies can listen to, though this is still extremely limited; also, acolytes and equipment remain vulnerable to corruption and subornment. Indeed, clear evidence exists that though ComStar was once an inscrutable information network, the Schism of 3052 and the subsequent Reformation have left ComStar leaking like the proverbial sieve.

Those outside the espionage field frequently overlook the third strand of intelligence: research and the media. Commanders can acquire considerable information of strategic value to a nation-state via legal and public means. For example, scientific journals frequently talk about cutting-edge developments in advance of any clear application; those with the time and resources to monitor the relevant channels may exploit these developments as they see fit. Likewise, financial returns that public companies are

obliged to post may provide insight into the quantity of work and likely clients, allowing economics-minded opponents to judge their production capabilities and the strengths of their client forces.

[It is now clear that the Inner Sphere's intelligence agencies underestimated the power of the Blakist forces and just how far they would be willing to go to achieve their goals. They had most of the pieces of the puzzle, but their focus had been on the Clans, or each other. It proved to be a costly breakdown in intelligence for which we all share significant blame. —DL]

STRATEGIC INTELLIGENCE GATHERING (NATIONAL)

While intelligence is most important in times of war, such endeavors take place almost constantly, as each power evaluates the strength and abilities of its opponents. With this in mind, each maintains a sizeable intelligence-gathering and analysis staff, some dedicated to studying particular opponents and others to studying general matters such as tactics and technology. Given this diversity of subject matter, most nations maintain multiple intelligence agencies, some charged with civil/political intelligence gathering (and appropriate counteractions) while a second agency deals with military matters. The Federated Suns offers a classic example; its Ministry of Intelligence Investigations and Operations (MIIO) oversees civil and political operations, while the Department of Military Intelligence (MI1 through MI7) handles military matters. In reality, the responsibilities of the two agencies overlap, but each one has its own area of expertise.

These agencies, most often directly employed by nation-states, such as the LIC in the Lyran Alliance or SAFE in the Free Worlds League, wield huge resources and have vast reaches but are geared toward long-term goals. This emphasis, coupled with the communication delays intrinsic to interstellar combat, makes these huge organizations poorly suited to playing a direct role on the battlefield. They do, however, play a decisive role in determining strategic objectives and shaping the structure of a campaign.

Strategic information gathering has played an equally vital role in shaping the modern battlefield, responsible in part for propagating military-technological innovations like the BattleMech, advanced weaponry and even the Helm Memory Core, without the permission of the original developer/owners. Intelligence-led missions have started wars—rumors of troop build-ups may trigger a pre-emptive attack or lead to defensive preparations that the enemy misinterprets, pushing him into action—and also stopped them.

TACTICAL INTELLIGENCE GATHERING (BATTLEFIELD)

Though it uses many of the same principles as strategic intelligence, tactical intelligence operates on a localized level and enables commanders to react quickly and decisively, placing it at the heart of the modern battlefield. Tactical intelligence gathering can direct a battle as it is being fought—for example, signal intercepts can identify the location of the enemy commander and prompt a headhunter attack in order to decapitate (or at least confuse) the enemy leadership.

In the field, listening in on enemy communications—and deciphering and interpreting them in a timely manner—can often make the difference between victory and defeat. Even when signals cannot be decoded quickly and efficiently, their frequency of occurrence and wavelength ('Mech grade comms use different signal strengths from those of infantry, which in turn are very different from civilian communications) can provide information on the location and likely actions of the enemy. Of course, the opposition knows this and can produce "ghost" radio chatter to conceal their actual activities. Direct and indirect observation of enemy activities is also important. Agents on the ground can confirm signal intelligence or contradict it, revealing deception attempts.

Independently, satellite reconnaissance (for those able to deploy spy satellites or to tap into commercial survey or weather-monitoring equipment) can track the movement of enemy forces. This type of intelligence tends to be limited in resolution, however—geostationary satellites must orbit a long way from the planet, or may have limited observation windows because of their orbital tracks. Spotter aircraft also play a role in the modern battlefield, locally or, in the case of airborne radar platforms, regionally.

PSYCHOLOGICAL OPERATIONS

While psychological operations (psyops) fall under the same operational jurisdiction as the agencies that gather intelligence, their methods and impact on warfare are quite different. Psyops are the dark shadows of intelligence gathering. Where intelligence gathering seeks the truth of events, psyops seek to shape the enemy's perception of those events and the forces facing them. By shaping perceptions—the central facet of these operations—agents can negatively influence the enemy's emotional and logical thought processes.

POLITICAL EDUCATION/INDOCTRINATION

The flipside to the psyops coin is when such arts are employed for the training of a nation's own military. While generally the term "indoctrination" carries a negative connotation, evoking images of dictators brainwashing their troops into fanatical soldiers, all states employ this important tool to one degree or another. In those states that do employ such "political education" practices, often a "political officer" is attached at the highest levels of each combat command to ensure the soldiers stay "true to the state." However, even the most democratic, freedom loving empires (or as freedom loving as you can achieve in what is still a state nominally controlled by a single person) use such tools to instill loyalty in their troops. A belief that their cause is just and they are bringing "freedom" to their poor, suppressed enemies—who don't know any better—can be every bit as effective as a sense of superiority and an ability to look at any person not of your state and see only an inferior being.



A Jade Falcon Trinary, having just disembarked from their grounded DropShip, begins the march to engage their enemy.

BattleForce is the *BattleTech* game of lightning-fast combat. These rules ramp up *Total Warfare* (*TW*) style game play to a fast-playing system that retains the feel of *BattleTech*. Players who are familiar with *BattleTech* will find it easy to adapt to *BattleForce*. New players will discover that *BattleForce* eases the learning curve of *BattleTech*, as it introduces similar mechanics in a simpler fashion.

Units in *BattleForce* are represented in a more abstract manner than in *Total Warfare*, but retain their individuality. 'Mechs are still 'Mechs and they still tear up the battlefield, only in *BattleForce* the pace is accelerated like a DropShip at liftoff.

BattleForce is also a perfect system for playing large games. Players who thirst for the tactical challenge of coordinating an entire regiment will find *BattleForce* well-suited to this exciting environment. Games ranging from twelve to one hundred Units—per player—are not only possible, but easily playable with *BattleForce*.

STANDARD RULES

The fast-play rules found in this section are considered the *BattleForce: Standard Rules*, and cover all the rules presented in *Total Warfare*. These rules use the same approach as *Total Warfare*, fully integrating a vibrant collection of Units into a unified rules system with a depth never before presented in the *BattleTech* universe. For the first time, aerospace Units, Support Units, IndustrialMechs, ProtoMechs and all the other staples of *BattleTech* are available in a fast-playing game system.

This section is divided into subchapters, each focusing on a particular aspect of play. The *Game Terms* subchapter, as the name implies, introduces various concepts and highlights some major differences from *Total Warfare* game play. The *Components* subchapter examines the various items necessary for play. The *Playing the Game* subchapter provides an overview of *BattleForce* game play, followed by detailed subchapters on each aspect of the turn sequence. The *Preparing For Play* subchapter looks at the military organization of the major factions in *BattleTech*, and provides a step-by-step guide to building Forces for use in *BattleForce*. These rules wrap up with some helpful tips on creating scenarios.

ADVANCED RULES

The *BattleForce: Advanced Rules* chapter (see p. 260) adapts the majority of advanced *BattleTech* rules and Unit types (as found in *Tactical Operations* and this book) for use in *BattleForce*. Additionally, a number of optional rules (specific to *BattleForce)* are introduced, along with more detailed Force creation rules and random Force creation.

CONVERSION RULES

The final chapter, *BattleForce: Conversion Rules* (see p. 342), provides detailed instructions for adapting *BattleTech* units from *Total Warfare* stats to *BattleForce* Elements (or vice versa). Detailed examples for each unit type take players through the process step by step.

TERMINOLOGY

Throughout these rules, Inner Sphere nomenclature is used when referring to types of Forces and Formations. This convention allows for concise and simple language. Except for specific references to an Inner Sphere Unit type or Formation type, whenever an Inner Sphere Unit type is used, it also refers to the equivalent Formation fielded by other factions. For example, if a specific rule applies to a battalion-equivalent Formation, it also applies to a Clan Cluster or a ComStar/WoB Level III.

BATTLEFORCE VERSUS TOTAL WARFARE

Though it has much in common with *Total Warfare*, *BattleForce* is a unique system. Unless explicitly stated, no *Total Warfare* rules apply in *BattleForce*.

GAME TERMS

While *BattleForce* is designed with new players in mind, some familiarity with the game terminology presented in *Total Warfare* is beneficial (see p. 42, *TW*). Additionally, *BattleForce* introduces several new game terms. Some select terms are briefly summarized here and explained in detail in the appropriate chapters.

Damage Value

Damage Value is the amount of damage inflicted by an attack at a given range (see *Determine and Apply Damage*, p. 228).

Deployment Zone

A deployment zone is an area five hexes wide, running the length of a player's home map edge (see *Setting Up*, p. 242).

Element

This term is equivalent to Unit, as used in *Total Warfare*. An Element is the smallest organizational grouping used in *BattleForce*. Though an Element may be comprised of multiple items (such as multiple soldiers in an infantry platoon), it functions as a single item in *BattleForce*.

The various types of Units found on 31st-century battlefields are defined in *Total Warfare* (see pp. 20-26, *TW*). Any Unit in *Total Warfare* or *Tactical Operations* game play may be used as an Element in *BattleForce*.

All Elements have *BattleForce* statistics derived from their *Total Warfare* statistics. These statistics are more abstract than the *Total Warfare* equivalent, but retain the unique "personality" of each Element. This change allows *BattleForce* to focus on the strategy and tactics of large-scale battles without becoming bogged down in record keeping. To convert *Total Warfare* Units (including your own designs) to *BattleForce* Elements, see the *BattleForce: Conversion Rules* chapter, starting on p. 342.

Force

Ranging in size from a single Unit to a Regimental Combat Team—or more—depending upon the scenario, a Force is comprised of all the Units on one side of the engagement.

Formation

A Formation is an organization of Units within a Force (see *Determine Military Organization*, p. 238).

Overheat Value

This value represents pushing an Element past its normal safe operating limits to inflict extra damage at the cost of reduced performance caused by excess heat (see *Overheating*, p. 236). Not all Elements have an Overheat Value.

Point Value

Derived from an Element's *TechManual* Battle Value, the Point Value measures the approximate battlefield strength of a given Element (see *Determining an Element's Point Value*, p. 238).

Skill Rating

All pilots/crews aren't created equal, a reality reflected by the Skill Rating. This rating is used as the base number for most *BattleForce* rolls, and to determine the Point Value of an Element (see *Combat Phase*, p. 225 and *Determining an Element's Point Value*, p. 238).

Special Abilities

Special abilities are additional features provided by equipment or Element type that modifies how an Element is used in *BattleForce* (see *BattleForce: Conversion Rules*, p. 342).

Unit

The smallest grouping of Elements—a Lance, Star, Level II and so on—is known as a Unit (see *Collecting Elements into Units and Formations*, p. 239).

ROUNDING

Recurring rules may request that a player "round up," "round down" or "round normally," depending upon the situation. Rounding up means to increase the value to the nearest desired number (usually the nearest whole number, though some rules ask for the nearest half, the nearest tenth or even the nearest 5 or more). For example, if a value of 3.1 is achieved and a player is asked to "round up to the nearest whole number," that 3.1 becomes a 4.

Rounding down means to decrease the value to the nearest desired number. For example, a value of 3.6 that the player must "round down to the nearest whole number" becomes a 3.

Rounding normally means that when the value to be rounded falls closer to a lower target number than a higher one, the player must round down. Conversely, values from the midpoint between two possible target numbers and up to the higher number must be rounded up. For example, a value of 3.4 that the player must "round normally" becomes 3, but a value of 3.5 or more (the midpoint between 3 and 4) would be rounded up to 4.



SJA-7D Shugenja, *First Sword of Light (House Kurita)*

COMPONENTS

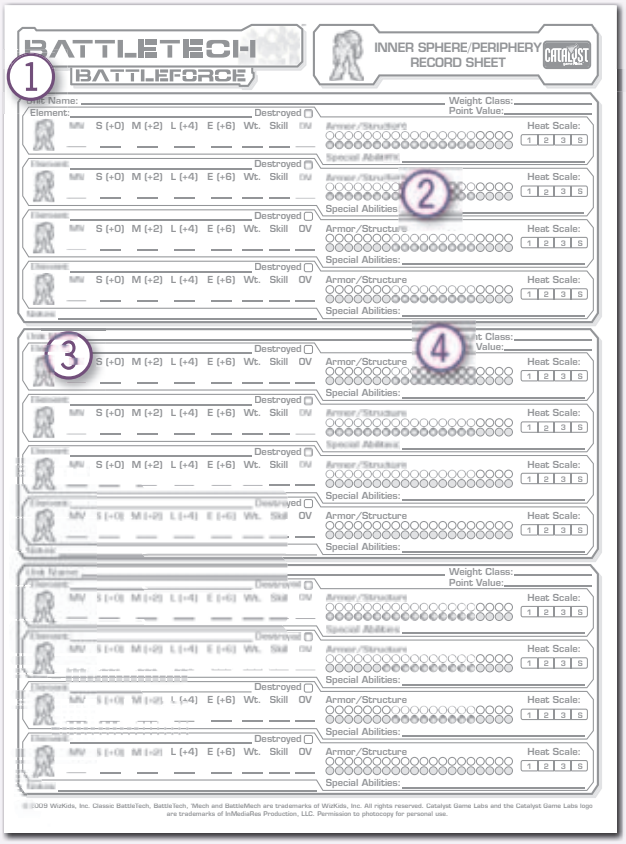
BattleForce uses the same components found in *Total Warfare* (see pp. 20-33, *TW*). All Units described in *Total Warfare* can be converted for use in *BattleForce*.

A complete list of Elements with *BattleForce* statistics may be found at www.classicbattletech.com.

RECORD SHEETS

Players use record sheets to track various types of information while playing *BattleForce*. Each type of Element has its own statistics block (stat block). Elements are organized into Units on record sheets for convenience.

Though the standard Inner Sphere Forces, the Clans, ComStar/Word of Blake, Aerospace Fighters and DropShips all use different record sheets, the forms share common features. Record sheets for advanced Elements are covered in the *BattleForce: Advanced Rules* chapter (see p. 260).



Stat Block

Within each Unit are the stat blocks for each Element. The number of Elements in a Unit varies by faction and Unit type. The stat block has the following primary areas:

Armor/Structure Diagram and Heat Scale

The white armor circles in the Armor Diagram represent an Element's armor, while the gray-shaded armor circles represent an Element's Structure.

Heat Scale (1/2/3/S): These notations represent an Element's heat scale, used only by 'Mechs and Aerospace Fighters. The heat scale enables players to track excess heat for an Element.

Game Statistics

This area details the pertinent statistics for an Element in *BattleForce*.

Element: The Element's name.

MV/TP: The available Movement Points (or Thrust Points) for an Element.

S/M/L/E: The lines below these entries are used to record the Damage Value for each range: short, medium, long and extreme. The modifiers for attacks at a given range are listed parenthetically after each range. If an Element does not have a Damage Value for a particular range, it may not make an attack at that range. Note that DropShips and some elements have multiple attacks. DropShips also have multiple weapon arcs, and thus have four lines of Damage Value statistics. DropShips and Aerospace Elements may also have Damage Values for the extreme range bracket. Additionally, DropShips may mount capital missiles, so they have an additional stat block for these attacks.

Wt.: An Element's weight or size-class (in *BattleForce* scale).

PV: The Element's Point Value.

T: The Element's Damage Threshold (applies to Aerospace Elements only).

Skill: The Element's Skill Rating. Each element has its own Skill Rating, independent from that of the Unit.

Special Abilities: Any special abilities, such as ECM (ECM) or Active Probes (PRB), are recorded here.

OV: An Element's Overheat Value. Only 'Mechs and Aerospace Fighters have Overheat Values, however not every one of these Elements will be capable of overheating.

Unit Details

Name: The Unit's name, for example, Charlie Lance (the name is created by the player).

Notes: A general catch-all field for other information.

Point Value: Located at the top of the Unit's stat block is an area for recording the Point Value of the entire Unit.

DICE

Players will need two standard six-sided dice to play *BattleForce*. When the rules refer to rolling 1D6, this means roll a single die and observe the result. When the rules refer to rolling 2D6, this means roll both dice and add the results together. Additionally, a single ten-sided die, 1D10, may be handy.

MAPS AND MINIATURES

BattleForce uses the same maps and miniatures as *Total Warfare*. Players may also create their own maps using HeavyMetal Map software, the official map-making software for *BattleTech* (see http://www.heavymetalpro.com).

The Unit counters from any previous edition of *BattleForce*, as well as the miniatures from the *Classic BattleTech Introductory Box Set* (and previous versions of the same) are all appropriate for *BattleForce* play.

Iron Wind Metals offers a full line of *BattleTech* miniatures. These miniatures are suitable for use in *BattleForce* as well (see http://www.ironwindmetals.com). Ideally, the corresponding type of miniature should be used to represent each Unit in *BattleForce*; that is, a heavy 'Mech miniature to represent a heavy 'Mech Unit, and so on. However, players may use any type of miniature or

counter to represent their Units so long as it is agreeable to all players and marked in some fashion so as to identify its facing.

COUNTERS

In addition to miniatures, *BattleForce* uses two different types of counters—Objective and Headquarters—which are placed on the map. Each counter is pictured and described below. Players can download a free PDF of these counters from www.classicbattletech.com, which they can cut out and use, or they can create their own using the icons below as a guide.

Headquarters Counter



The Headquarters counter is placed on the playing area to represent a Force's tactical nerve center. The opposing player's Headquarters is an offensive objective for each player.

Objective Counters



Objective counters represent any tangible, physical asset. The exact nature of an objective is limited only by the players' imaginations. In a standard game, a total of four objective counters are placed on the map, two for each player.









A NOTE ON SCALE AND THE RULES

Each hex on the ground map represents roughly 90 meters and each turn represents 30 seconds of game time. On the space map, each hex is equivalent to 3 hexes in *Total Warfare* game play (or 54 km), and each turn represents approximately three minutes of game time. Although the scale changes would dictate levels of 18 meters, *BattleForce* retains the *Total Warfare*-style levels of 6 meters. This change allows Units maneuvering on a *BattleForce* map sheet to use essentially the same rules as they would on a *Total Warfare* map sheet.

However, players should note that such "real world" terms are abstractions when applied to the board game. *BattleForce* is a game, not a detailed simulation. Therefore, the real world must take a back seat to game play—for simplicity, length of play, space required and simple enjoyment. Players may find the "real world" at odds with the stacking rules, ranges, damage process and so on. They may notice that some of the conversion mechanics don't exactly translate *Total Warfare* to *BattleForce*. These rules have been designed to maximize playability, and certain concessions have been necessary. Players are encouraged to remember this and not get bogged down in "real world" mechanics and physics. Just enjoy the game!

PLAYING THE GAME

This section provides an overview of the turn sequence for *BattleForce*. These rules assume that there are two sides in each game, either two players or two teams of players. Wherever the rules refer to a player, that term can mean a team of players as well as an individual. If an odd number of teams are present, begin each phase with the team indicated (usually the initiative loser) and continue in initiative order (usually low to high) until all teams have acted.

SEQUENCE OF PLAY

A *BattleForce* game consists of a series of turns. During each turn, all Units on the map have an opportunity to move and fire their weapons or make physical attacks. Each turn consists of several smaller segments of time, called phases. During each phase, players may take one type of action, such as movement or combat. The players execute the phases in a given order. Specific actions, movement, effects of damage and so on are fully explained in separate sections later in these rules.

Each turn includes the following phases, performed in the following order:

1. Initiative
2. Ground Movement Phase
3. Aerospace Atmospheric Movement Phase
4. Aerospace Space Movement Phase
5. Combat Phase
6. End Phase

INITIATIVE PHASE

Each player rolls 2D6 and adds the results together to determine his or her Initiative; re-roll ties. The player with the higher result is the Initiative Winner. The other player is the Initiative Loser for this turn.

GROUND MOVEMENT PHASE

The player who lost Initiative completes all actions in this phase, followed by the player who won the Initiative.

The acting player moves all of his ground Units. Ground Units as defined in *Total Warfare* (see p. 20, *TW*) include hovercraft, naval vessels, tracked vehicles, VTOLs, wheeled vehicles and WiGEs.

AEROSPACE ATMOSPHERIC MOVEMENT PHASE

The player who lost Initiative completes all actions in this phase, followed by the player who won the Initiative.

The acting player moves all of his aerospace Units that are operating in the atmosphere. Aerospace Units as defined in *Total Warfare* (see p. 20, *TW*) include Aerospace Fighters, Airships, Conventional Fighters, DropShips, Fixed-Wing Support Elements and Small Craft.

AEROSPACE SPACE MOVEMENT PHASE

Due to the different time scale used in space, this phase occurs every six turns. The player who lost Initiative completes all actions in this phase, followed by the player who won the Initiative.

The acting player moves all of his aerospace Units that are operating in space. Aerospace Units as defined in *Total Warfare* that can operate in space include Aerospace Fighters, DropShips and Small Craft.

COMBAT PHASE

The player who lost Initiative completes all actions in this phase, followed by the player who won the Initiative. Space combat only occurs on turns with a space movement phase.

The acting player declares targets for all of his Elements, and then resolves combat. Each surviving Element of each Unit may make one attack. Damage from these attacks is resolved as each Element finishes its attacks, but does not take effect until the End Phase; this means a destroyed Element will normally have a chance to return fire.

END PHASE

Both players may complete this phase simultaneously.

Each player executes any miscellaneous actions remaining in the turn, such as removing eliminated Elements. The specific rules for such actions state whether or not they take place during the End Phase. For example, Elements that began a turn shut down from overheating restart in the End Phase, with their heat levels reduced to zero.

Players repeat all these steps until one side meets its victory conditions for the scenario.

GROUND MOVEMENT PHASE

The following section describes the rules governing ground movement.

MOVEMENT BASICS

As in *BattleTech*, Units in *BattleForce* change their position on the map by moving from one hex to another using Movement Points (MP). Each Element of each Unit has a base MP allowance listed on its record sheet. A Unit's MP always equals the lowest MP of any of its surviving Elements. Unlike *BattleTech*, Units in *BattleForce* do not have the choice of expending Walking or Running MP, they simply move. All Elements in a Unit move at the same time and to the same hex.

As shown at the top of the Movement Costs Table (see p. 217), a Unit must spend 1 Movement Point (MP) to enter a hex. The type of terrain within a hex adds more MP costs, as shown under the MP Cost Per Hex/Terrain Type column of the table. Unlike *BattleTech*, a ground Unit cannot drop to the ground or stand up, but it may make any number of facing changes at no cost.

The controlling player always starts with a base cost of 1 MP for a Unit to enter a new hex. The player then consults the Movement Cost Table and adds any MP required, based on the type of hex being entered and/or the action being taken. Such additional modifiers are cumulative. For example, a Unit entering a clear hex only spends the base 1 MP for entering a new hex. However, a 'Mech Unit entering a heavy woods hex two levels above its current hex would spend 5 MP (1 base MP for entering a new hex, +2 for the two-level change and another +2 for heavy woods).

A ground Unit need not expend all of its available MP when moving. In addition, in place of moving, a Unit may simply stand still.

Water

Water hexes have a depth that functions like a level change (see *Level Change*, below). However, Units entering water hexes must pay the MP cost for entering water, plus the cost of entering the hex, plus the cost for the level change (if any), except for amphibious, hover, WiGE and Naval vehicles (see Movement Costs Table, p. 217).

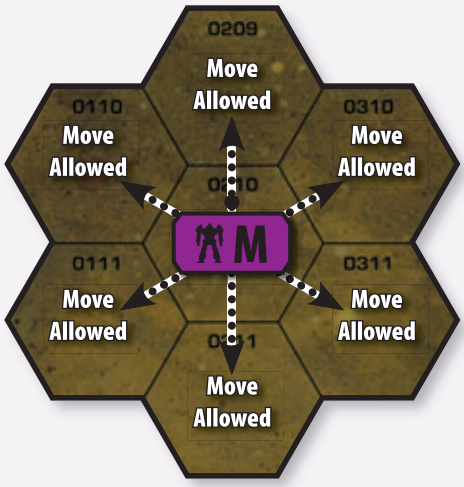
Submerged Units use slightly different movement rules (see *Underwater Movement*, p. 219).

Prohibited Terrain

Certain kinds of Elements may not enter certain types of terrain. These terrain types and movement restrictions appear on the Movement Cost Table.

Support Vehicles

If a wheeled Support Vehicle lacks an Off-Road Vehicle Chassis and Controls Modification, then movement costs an additional 1 MP per hex, unless the hex is paved.



• BATTLEFORCE MOVEMENT DIRECTION DIAGRAM •

Level Change

'Mechs may change level or depth by 1 or 2 levels per hex, at a cost of 1 MP per level. Ground vehicles, infantry and ProtoMechs may only change 1 level per hex (this rule does not apply to jumping, VTOL or WiGE Units (see *Jumping*, p. 219; *VTOL Movement*, p. 218; and *Wing-In-Ground-Effect Movement*, p. 218). Level changes greater than these are considered prohibited terrain. No Unit may "voluntarily fall" from a greater level in order to circumvent the maximum allowable level change in a single hex.

ProtoMechs, VTOLs and Submarines: ProtoMechs, VTOLs and submarines must spend 1 MP to change their level by 1.

Ground Vehicles and Infantry: Ground vehicles must spend 2 MP to change levels by 1. If using ground movement (not jumping or VTOL), infantry must likewise spend 2 MP (see *Infantry*, p. 218).

Minimum Movement

As long as a Unit is mobile (meaning it has at least 1 MP it can expend), it can always move into an adjacent hex, regardless of the terrain cost of that hex. However, such movement must be the only MP expenditure the Unit makes in that turn and the terrain cannot be prohibited.

MOVEMENT COSTS TABLE

Movement Action/Terrain Type	MP Cost Per Hex	Prohibited Elements
Cost to Enter Any Hex	**1**	
Terrain Cost When Entering Any New Hex		
Clear	+0[5]	Naval vessel
Paved/Bridge	+0	Naval vessel
Road	+0[3]	Naval vessel
Rough	+1	Wheeled, Naval vessel
Light Woods	+1[7]	Wheeled[13], hover, VTOL[9] WiGE[9], Naval vessel
Heavy Woods	+2[8]	Vehicles[9], Naval vessel
Water		
Depth 0	+0	Naval vessel
Depth 1	+1[1]*	Infantry[11], vehicles[4,6]
Depth 2+	+3[1]*	Infantry[11], vehicles[4,6], IndustrialMechs
Level Change (up or down)		
1 level	+1 ('Mechs, VTOLs, submarines, ProtoMechs)	—
	+2 (infantry, ground vehicles)	
2 levels	+2 ('Mechs, VTOLs, submarines)	Infantry, ground vehicles WiGE[10], ProtoMechs
3+ levels	+1/level (VTOLs, submarines)	'Mechs, ProtoMechs, infantry ground vehicles, WiGE[10]
Rubble	+1	Wheeled, Naval vessel
Light building	+1[2]	VTOL, WiGE, Naval vessel
Medium building	+2[2]	VTOL, WiGE, Naval vessel
Heavy building	+3[2]	VTOL, WiGE, Naval vessel
Hardened building	+4[2]	VTOL, WiGE, Naval vessel
Additional Movement Actions		
Facing change	Free[12]	

[1]MP cost to move along the bottom of the water hex
[2]Infantry pays only 1 MP to enter any building hex.
[3]If traveling along road; otherwise cost of underlying terrain.
[4]Hovercraft may enter all water hexes along the surface.
[5]If a wheeled Support Vehicle lacks the Off-Road Vehicle Chassis and Controls Modification, then movement costs 1 additional MP per hex.
[6]Wheeled or tracked Support Vehicles with the Amphibious Chassis and Controls Modification can move through any water hex on the surface at a cost of 2 MP.
[7]Infantry pays only 1 MP to enter any Light Woods hex.
[8]Infantry pays only 2 MP to enter any Heavy Woods hex.
[9]VTOL and WiGE vehicles can enter a woods hex provided their elevation is higher than the level of the woods in the hex.
[10]This only applies to WiGE Units entering a hex whose level is higher than the Unit's current hex; see *Wing-In-Ground-Effect*, p. 218, for rules governing entering hexes whose level is lower than the Unit's current hex.
[11]Infantry can enter a water hex of Depth 1 or deeper if they are noted as having UMU MP.
[12]Airborne aerospace Elements must pay for facing changes (see *Facing and Heading*, p. 221).
[13]Wheeled Elements with the Bicycle or Monocycle movement modes may enter light woods as if they were a tracked Element.
* Plus cost to change levels if applicable

VEHICLE MOVEMENT MODE TABLE

Movement Mode	BR Movement Code
Hover	h
Naval	n
Submersible	s
Tracked	t
VTOL	v
Wheeled	w (b/m)**†
WiGE	g

**Vehicles and mechanized conventional infantry
†Bicycle or Monocycle Chassis and Controls modification

VEHICLES

Vehicles have one of seven movement types as shown on the Vehicle Movement Mode Table (see p. 355). Tracked and wheeled vehicles follow all the rules outlined in Movement Basics. The remaining movement modes have special rules, as described below.

Hover Movement

Any Element with Hover MP is considered a hover vehicle for purposes of movement rules. Hovercraft have the movement restrictions shown on the Movement Cost Table. The main advantage hovercraft have over wheeled and tracked Elements is the ability to traverse water hexes.

Naval Movement

Naval movement applies only to Naval and hovercraft/WiGE Elements. This type of movement includes moving on and (for submarines) below the water's surface. Surface Naval Units may only move through Depth 1 or deeper water hexes, at a cost of 1 MP per hex entered, regardless of depth. Naval movement is noted as the Naval movement type on the Element's stat block.

Treat hovercraft and WiGE Units moving over Depth 1 or greater water hexes like surface Units.

Submarines (Submersible Movement)

Regardless of depth, a submarine (including Support Vehicles with the Submersible Chassis and Controls Modification) expends only 1 MP to enter a water hex. A submarine Unit can move vertically at a cost of 1 MP per depth that it ascends or descends. A submarine can move any number of depths up and down in a single water hex as long as it has sufficient MP.

A submarine cannot descend to a depth greater than that of its hex or ascend above the water's surface (Depth 0). In order to move horizontally, the submarine must be at a vertical depth higher than the depth of the hex it occupies—in other words, it cannot move along the bottom. If a submarine is at the depth of the hex it occupies and/or enters, it is considered to be resting on the bottom.

The Unit's depth must be recorded (or clearly indicated) each turn at the end of the Ground Movement Phase. All submarines in a Unit must operate at the same depth.

Tracked/Wheeled Movement

Tracked and wheeled Elements follow the rules outlined in *Movement Basics* (see page 216). Bicycle (b) and Monocycle (m) Elements may enter Light Woods hexes.

VTOL Movement

Any Element with VTOL MP is considered a VTOL for purposes of movement rules. This should be noted on the Element's stat block. As with jumping, all surviving Elements in a Unit must be VTOLs for the Unit to employ VTOL movement.

VTOLs pay only 1 MP to enter any hex, regardless of the underlying terrain type. However, the VTOL must be at least one elevation above the level of the hex it currently occupies. A VTOL that enters a Clear, Paved or Building hex at the elevation of that hex is considered to have landed (and ends its movement immediately). A VTOL that enters any other hex at an elevation equal to (or below) the hex's level crashes. A VTOL that crashes takes 1 point of damage and may not move for the rest of the game. Note: A VTOL with the Amphibious Chassis and Controls modification may also land in a water hex.

A VTOL may move vertically at a cost of 1 MP per elevation that the Unit ascends or descends. A VTOL can move any number of elevations up and down in a single hex, as long as it has sufficient MP.

All VTOLs in a Unit must operate at the same elevation, which must be recorded (or clearly indicated) each turn at the end of the Ground Movement Phase.

Wing-In-Ground-Effect (WiGE) Movement

Any Element with WiGE MP is considered a WiGE for purposes of movement rules. This should be noted on the Element's stat block. As with jumping, all surviving Elements in a Unit must be WiGEs for the Unit to employ WiGE movement.

WiGE Elements have a Ground MP of 1 (and are considered a hover Element for purposes of terrain restrictions) until they take off. Take off—which must be done from a clear, paved or water hex—costs 2 MP, which must be spent in a single turn, and places the vehicle at one elevation above the level of the underlying terrain in the hex from which it took off. While airborne, WiGE vehicles fly one elevation above the underlying terrain, and so are unaffected by water, rubble or rough terrain. They must maneuver over or around woods hexes.

A WiGE vehicle must move at least 2 hexes per turn to remain airborne (this minimum movement requirement does not apply on the turn the WiGE takes off); otherwise it must land at the end of its movement (it does not cost a WiGE any MP to land). WiGE vehicles may only land in clear or paved hexes. If they attempt to land in any other hex, they crash. A WiGE that crashes takes 1 point of damage and may not move for the rest of the game.

A WiGE Unit entering a hex whose level is one higher than its current hex automatically maintains its one elevation of clearance above the terrain, and expends no additional MP to do so. A WiGE cannot enter a hex whose level is two or more higher than its current hex.

A WiGE entering a hex with a level lower than its current hex automatically descends to maintain the standard one elevation above the underlying terrain, regardless of the difference in levels between the two hexes, at no additional MP expenditure. However, a WiGE may avoid such a descent (and remain at the same elevation) by expending 1 additional MP per hex. If the WiGE does not reach a hex within 1 level of the one it exited from by the end of its Movement Phase, it automatically descends to the standard elevation above the underlying terrain in the final hex of its movement. If this occurs over prohibited terrain, the WiGE crashes.

All WiGEs in a Unit must operate at the same elevation, which must be recorded (or clearly indicated) each turn at the end of the Ground Movement Phase. In addition, they must all take off or land together.

INFANTRY

Similar to other ground Elements, infantry have various movement modes available as shown on the Infantry Movement Mode Table (see p. 219). The "Move As" column indicates which movement rules apply to the indicated infantry type.

An entry of Ground Element indicates the infantry may move into all non-water hexes and change up to 1 elevation level per hex at a cost of 2 MV. Additionally, all infantry, and battle armor, elements may forego their normal movement mode and expend 1 MV as if they were a foot infantry element.

ADDITIONAL MOVEMENT RULES

The following rules cover additional movement options.

Jumping

Jumping allows the most flexibility in movement. Any jump-capable Unit has (j) listed next to its MP rating. All surviving Elements in a Unit must be jump-capable in order for the Unit to use jumping movement. When a Unit jumps, it can move 1 hex for every available Jumping MP. It may jump in any direction, regardless of its original facing. The player chooses a target hex for the Unit to jump into, and then the Unit travels to that hex along the shortest possible route, landing with any facing desired.

A Unit can jump over and into any hex, regardless of terrain type. However, if the jump path crosses a level higher than the sum of the Unit's Jumping MP plus the level of the hex in which the jump started, then the Unit cannot make the jump.

If more than one possible path exists between the Unit and its goal hex, the player may declare which path his Unit takes. A Unit with at least one Jumping MP may jump down any number of levels.

Units may jump into, but not out of water hexes (Depth 1 or deeper) in *BattleForce*.

Movement on Pavement

In *BattleForce*, moving on a road or paved terrain is identical to moving through clear terrain, with a few exceptions that apply primarily to ground Elements.

All ground Elements traveling on roads pay only 1 MP per hex regardless of the hex's underlying terrain. A ground Element is considered to be traveling on a road if it moves from one hex to the next on that road. Ground Elements may move through prohibited terrain while traveling on a road, but they must begin and end their movement through such terrain on the road and remain on it while traversing the terrain.

A ground Element traveling on a road must pay any costs required to change levels while entering a hex. Ground vehicles moving on pavement may receive a movement bonus of 1 MP if the Element begins its turn on a paved hex and continues to travel on pavement for the entire Movement Phase.

Underwater Movement (Non-Naval Units)

Underwater movement—moving across the bottom of a water hex, as opposed to moving through the water itself—is rare but does occur, though few Units without the submersible movement mode can survive complete submersion and still function.

To be considered underwater, a Unit must be completely submerged. It cannot be in Depth 0 water; 'Mechs must be in at least Depth 2 water. Unless a Unit has the UMU special ability (see p. 354), the following rules apply for movement underwater in depths up to Depth 15.

A Unit must pay 4 MP (base MP of 1 for entering a hex, +3 for Depth 2 or greater water) for each hex it enters. In addition, a 'Mech must pay all standard MP for moving from one depth to another (see Movement Costs Table, p. 217).

INFANTRY MOVEMENT MODE TABLE

Movement Mode	BF Movement Code	Move As
Foot	f	Ground Element
Jump	j	Ground Element with Jumping ability
Mechanized		
Hover	h	Hover Element
Tracked	t	Tracked Element
Wheeled	w	Wheeled Element
Motorized	m	Ground Element

FACING

Every hex on the map has six edges, called hexsides. In *BattleForce*, infantry (conventional and battle armor) have no facing. All other Units must face one of those six hexsides. The facing of a Unit does not represent the literal facing of every one of its Elements, but rather its overall tactical deployment. The Unit's facing is the direction in which most of its Elements are facing during the turn, and where their attention is focused. In effect, it is the direction in which they are "looking."

'Mech Units are considered to be facing the way the feet of the miniature representing the Unit are pointing (or the arrow, if using a counter). Vehicle and aerospace Units are considered to be facing in the direction of the front side of their representative miniature (or the arrow, if using a counter). Infantry Units have no facing.

A Unit's facing affects combat (see *Combat Phase*, p. 225), and can only be voluntarily changed during the Movement Phase.

Units not clearly facing a hexside at the end of the Movement Phase can be realigned to one of the two closest hexsides by the opposing player.

STACKING

At the end of each Movement Phase, a maximum of ten ground Elements from any number of Units on each side may occupy a single hex. Up to a maximum of 20 ground Elements may occupy the hex. This maximum is called the stacking limit. Aerospace Units and airborne VTOLs ignore the stacking limit.

During the Movement Phase, a Unit may move through hexes occupied by other friendly Units and airborne VTOLs. Though a Unit can enter a hex occupied by an enemy Unit, it may not leave that hex in the same turn; entering an enemy hex automatically ends a Unit's movement. A Unit may not end its movement in a given hex if doing so violates the stacking limits.

Units do not actually take up the entire hex they occupy. A 90-meter-wide hex offers plenty of room for any Unit to move around and avoid fire, and also allows enemy Elements to share the hex. A Unit tactically controls the hex it occupies, but does not physically fill it. While difficult to envision that many 'Mechs in a 90-meter area, the concession is necessary for playability. Players may wish to refer to A Note on Scale And the Rules (see p. 36, *TW*).

If a Large Support Element, Large Transport Element or DropShip occupies a hex, no other Units may enter that hex. Large Elements always act independently and may not belong to Units in the Standard Rules.

In the event the number of miniatures in a single hex becomes unwieldy on the map, players should remove them from the map, carefully noting their facing, and replace them with a suitable counter.

Tom and Eric have moved multiple Units into a single hex to trade short-range attacks. Tom is fielding a ComStar Force. He has one Level II of 'Mechs (6 Elements) in the target hex. He has another Level II that has been reduced to 3 vehicles. He moved them into the target hex as well, for a total of 9 Elements on Tom's side.

On Eric's side, he has one full Star of OmniMechs (5 Elements) in the target hex. He has another Star that has lost one of its 'Mechs, leaving it with 4 Elements. Eric moves this Unit into the target hex as well, giving both Tom and Eric 9 Elements in the target hex.

AEROSPACE ATMOSPHERIC MOVEMENT PHASE

This section focuses on aerospace movement as it relates to ground support operations. Space movement is covered in the Aerospace Space Movement Phase section (see p. 224).

ATMOSPHERIC MOVEMENT BASICS

Aerospace Elements have one of three movement types as shown on the Aerospace Movement Table. The following movement rules apply to Aerodyne craft. The effects of Airship and Spheroid movement types are explained in their respective sections.

AEROSPACE MOVEMENT TABLE

Movement Mode	BR Movement Code
Aerodyne	a
Airship	i
Spheroid	p

Altitude

BattleForce divides the airspace above the ground map into three Altitudes (not to be confused with Elevations): Low, Medium, and High. Moving between each Altitude costs 2 TP when gaining Altitude (i.e. 2 TP from Low to Medium, and another 2 TP from Medium to High), and 0 TP when losing altitude. Regardless of what altitude an aerospace Unit operates at, it ignores all ground terrain features. All Elements of a Unit must operate at the same altitude

Thrust Points and Velocity

Unlike ground Units that expend movement points to move between hexes on the map, every aerospace Element has a set number of Thrust Points available each turn. Thrust Points are used to establish a velocity that dictates how many hexes an aerospace Element must enter each turn. The higher the velocity, the more hexes an aerospace Element must enter. For each point of velocity, an aerospace Element must move 5 hexes.

An Element may spend Thrust Points to change its velocity (accelerate or decelerate). Each Thrust Point spent increases or decreases the Unit's velocity by 1. This change in velocity may be made prior to movement, or at the conclusion of movement. An Element cannot change velocity twice in the same turn. It also cannot change velocity at the end of one Movement Phase and again at the beginning of the following turn's Movement Phase.

In the atmosphere, Units may not fly at a velocity greater than 12. If a situation occurs that requires a Unit to accelerate above 12, the Unit remains at a velocity of 12. A Unit's velocity cannot be reduced below zero.

At the beginning of each turn, reduce an aerospace Unit's velocity by half (rounding fractions down). If this results in a velocity of zero and the aerospace Unit is an aerospace fighter, airship, DropShip, Small Craft, or has the VSTOL special ability (see p. 354), it may spend 1 TP to hover or it may increase its velocity. If the Element cannot hover and cannot spend thrust to increase to a velocity of 1, the Unit falls one altitude level each turn and must attempt to land if it reaches the ground (see *Liftoff, Landing and Ground Movement*, p. 223).

All aerospace Elements in a Unit must take off and land together, and must operate at the same velocity. The velocity must be recorded each turn.

A Unit is finished moving when it has moved the number of hexes dictated by its velocity. It may not move less than this number of hexes; however, a Unit need not expend all of its available Thrust Points when moving.

Bombs: Conventional and Aerospace Fighters (including Fixed-Wing Support Elements) may carry bombs according to their Bomb special ability rating (see p. 346). Each bomb carried reduces a fighter's available thrust by 1. A fighter may carry multiple types of bombs.

Spheroid DropShips and Small Craft

These Elements do not use velocity in the same way as their aerodyne cousins. Spheroid DropShips and Small Craft are always considered to have a velocity of zero, and must expend at least 1 Thrust Point every turn to remain airborne.

Airships

As a special class of Conventional Fighter, Airships fly and maneuver in the same fashion as Aerodyne DropShips, but they may also hover like Spheroid Small Craft and must use the Spheroid Small Craft rules for landing and lift-off. Hovering maneuvers cost an Airship 1 Thrust Point; landing maneuvers likewise require 1 Thrust Point.

Airships move far more slowly than most other conventional air vehicles. Because they can be designed using fractional Thrust Points, they therefore have fractional velocities. For each .25 of velocity, an Airship must move 1 hex. Airships may not achieve a velocity greater than 3.

An Airship reduced to zero velocity drifts in a randomly determined direction. Roll 1D6 and consult the Dive Bombing Scatter Diagram (see p. 235). The result indicates the prevailing wind, which does not change for the duration of the game. The Airship drifts in the indicated direction, 1 hex per turn, until it moves off the playing area (at which point it is considered destroyed for purposes of victory conditions). If another Airship is reduced to zero velocity, do not roll for the prevailing wind, but continue to use the direction previously determined.

ATMOSPHERIC FACING CHANGES TABLE

Velocity	Powered Turn Cost	Conventional Fighter	Aerospace Fighter*	Aerodyne DropShip/ Small Craft†
1	1	3	3	3
2	1	4	5	5
3	1	5	7	8
4	1	7	9	11
5	1	8	11	13
6	1	9	13	16
7	1	11	15	19
8	2	12	17	21
9	2	13	19	27
10	2	15	21	27
11	2	16	23	29
12	3	17	25	32

*Small and Medium Fixed-Wing Support Elements use this column. Large Fixed-Wing Support Elements use the Aerodyne DropShip/Small Craft column.
†Includes Airship Support Elements.

Airships may voluntarily drift on the wind rather than expending Thrust Points.

Facing and Heading

As with ground Units, aerospace Units must have a facing. Under standard aerospace Unit movement rules, a Unit's facing and heading (direction of movement) are the same. Unlike ground Units, an aerospace Unit's facing also affects its movement. Aerospace Units may only move into the hex directly in front of them. To move into any other hex, the aerospace Unit must make a facing change first; however, aerospace Elements cannot change facing without moving forward at least one hex, and may only change their facing by one hexside before moving forward again.

Thanks to their aerodynamic construction, aerospace Units (except for Spheroid DropShips and Spheroid Small Craft) may make a number of free facing changes. In addition, a facing change can be made by spending one-fourth of the Unit's velocity in Thrust Points (round down to a minimum of 1). This is called a powered turn. Aerospace Units cannot combine a free and powered facing change to change facing by two hexsides, nor can they make any type of turn without first moving forward one hex. Elements with the Atmospheric (ATMO) special ability (see p. 345) cannot make powered turns.

The Atmospheric Facing Changes Table (see above) shows how many hexes an aerospace Unit must move (in a straight line) before making a free facing change. An aerospace Unit may split this movement between turns. The Powered Turn column shows the number of Thrust Points required to make a powered turn at the given velocity.



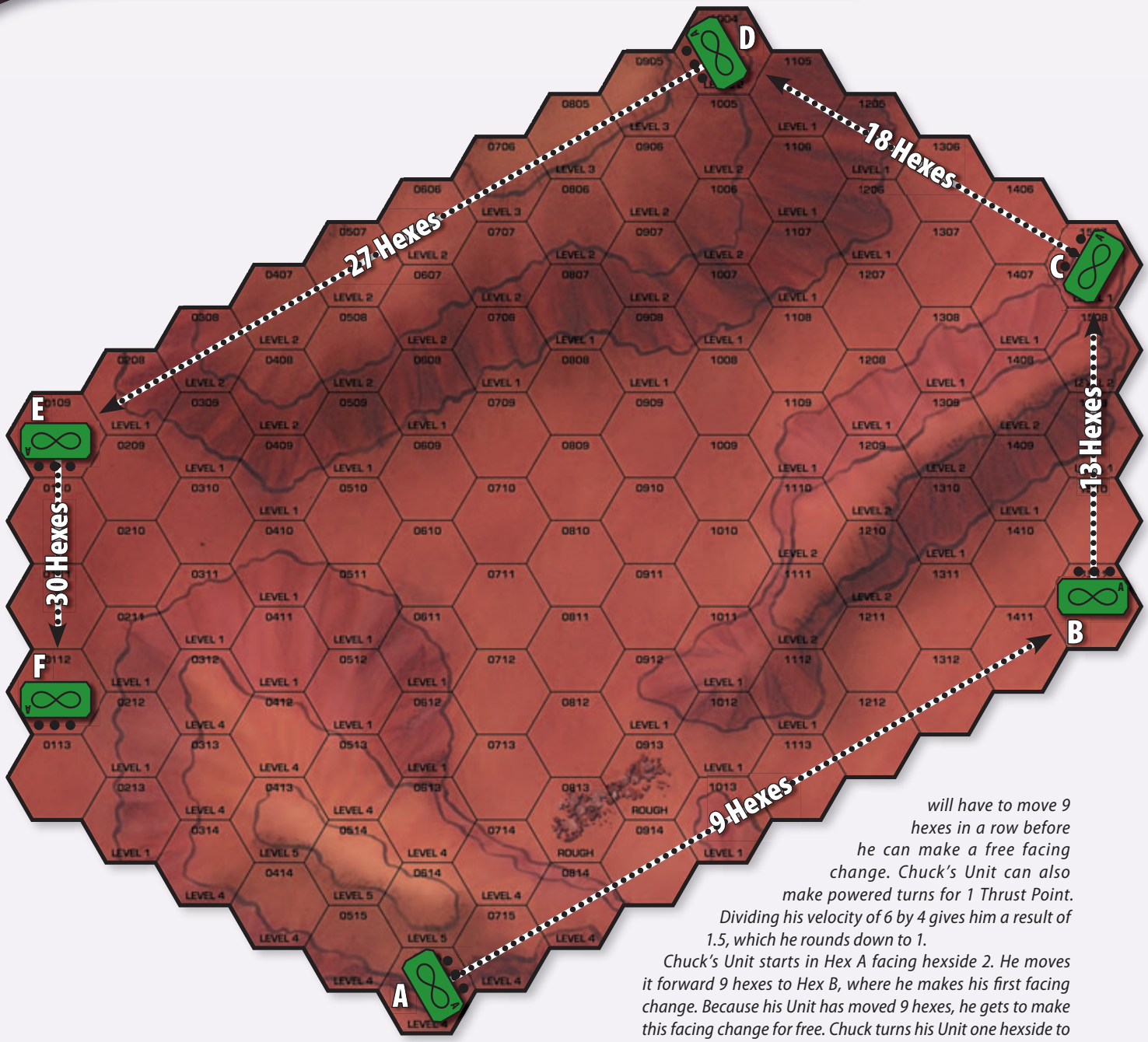
A flight of Seydlitz *and* Stuka *fly nape-of-the-earth to catch marauding pirates unaware.*

Spheroid Elements facing in the atmosphere is effectively "up." They may move in any directing without first making a facing change. They may also rotate on their axis (effectively reversing left and right sides) for 1 TP.

Units not clearly facing a hexside at the end of the Movement Phase can be realigned to one of the two closest hexsides by the opposing player.

Spheroid DropShips and Small Craft

In the atmosphere, these Elements are effectively facing nose up for combat purposes. They may move up to 3 hexes in any direction for every Thrust Point spent. If a Spheroid craft spends thrust on movement, it does not have to spend an extra point of thrust to remain airborne and does not lose altitude.



• BATTLEFORCE AEROSPACE MOVEMENT DIAGRAM•

In the BattleForce Aerospace Movement Diagram above, Chuck's aerospace Element is comprised of two 'Mechbuster Conventional Fighters on the Desert Mountain map. Each fighter has 5 Thrust Points. The Unit had a velocity of 6 at the end of the last turn. At the beginning of the new turn, Chuck reduces the Unit's velocity by half, leaving him with a velocity of 3. Chuck wants to keep his Unit moving swiftly, so he spends 3 Thrust Points to bring the Unit back up to a velocity of 6.

Consulting the rules under Thrust Points and Velocity, Chuck sees that his Unit will have to move through 30 hexes this turn (6 x 5 = 30). Next, Chuck looks at the Atmospheric Facing Changes Table and sees that at a velocity of 6, his Unit will have to move 9 hexes in a row before he can make a free facing change. Chuck's Unit can also make powered turns for 1 Thrust Point. Dividing his velocity of 6 by 4 gives him a result of 1.5, which he rounds down to 1.

Chuck's Unit starts in Hex A facing hexside 2. He moves it forward 9 hexes to Hex B, where he makes his first facing change. Because his Unit has moved 9 hexes, he gets to make this facing change for free. Chuck turns his Unit one hexside to the left, and then moves it to Hex C. As he has only moved 4 hexes, this facing change is going to cost him 1 Thrust Point. His second facing change is also to the left. Next, he moves the Unit 5 hexes to Hex D and spends 1 Thrust Point for a third facing change. The Unit has moved 18 hexes so far, leaving 12 hexes to go. Chuck moves his Unit 9 hexes straight ahead to Hex E and makes another left-side facing change. Chuck finishes the Unit's movement in Hex F.

The Unit has made a total of 4 facing changes; 2 for free, 2 at a cost of 1 Thrust Point each. It has spent all of its available 5 Thrust Points for this turn (3 to maintain a velocity of 6, plus 2 on facing changes). Assuming Chuck maintains a velocity of 6 in the following turn, the Unit would not be able to make another free turn before it flew off the map; however, once it enters at least one hex, it can make a powered turn.

LIFTOFF, LANDING AND GROUND MOVEMENT

Aerospace Units may begin a scenario landed or in flight. While on the ground, aerodyne aerospace Units may move as a wheeled Element with MP equal to half their Thrust Points (round down to a minimum of 1). Spheroid aerospace Units may not move while grounded. An aerospace Element may not lift off during a turn in which it expended ground MP.

Aerodyne Units

Aerodyne DropShip Units require 7 hexes for liftoff and 5 hexes for landing. VSTOL Units require 4 and 2 hexes respectively. All other aerodyne aerospace Units require 7 hexes for lift-off, but only 3 hexes for landing. These hexes must be in a contiguous straight line (a runway). For lift-off, these hexes must be clear or paved and may not vary in level. A road through mixed terrain—so long as it is level—is an acceptable runway. A Unit may attempt to land in any terrain, but doing so results in damage to the Elements as described in *Landing Damage*, below.

Aerodyne Units spend 2 Thrust Points to lift off, and zero Thrust Points to land. To lift off, the Unit must begin the turn at one end of a runway facing the other end. One point of velocity is spent moving (on the ground) to the opposite end of the runway, after which the Unit is airborne (at low altitude) and finishes moving normally. To land, the Unit must begin its turn at low altitude over one end of the runway facing the opposite end, and reduce its velocity to zero. The Unit moves along the ground the entire length of the runway. It is placed at the opposite end of the runway unless a terrain feature intervenes between one end of the runway and the other. In that case, the Unit is placed on the terrain feature and suffers landing damage as described below.

Airship and Spheroid Units

Airships and Spheroids may lift off or land in a single hex. Airships pay 1 TP and all other Spheroids pay 2 TP for each maneuver. Approved terrain types are clear and paved for airships. For all other spheroids, clear, paved, woods, and building hexes are approved. Any Unit attempting to land in non-approved terrain damages each Element as described in *Landing Damage,* below.

Non-Airships attempting to land in non-paved hexes damage the terrain. If the target hex contains any type of woods or buildings, they are automatically destroyed and the terrain is converted to rough or rubble (respectively). Additionally, the level of the target hex is reduced by one level.

To lift off, the Unit spends the required TP and rises to low altitude, then it may continue moving normally. To land, the Unit must begin its turn at low altitude over the desired hex and spend the required TP to land.

Intervening Units

For simplicity, intervening Units are assumed to automatically evade landing and lift-off operations.

Landing Damage

Any aerospace Unit landing in non-approved terrain suffers damage. A Unit's movement ends immediately when this happens. An Aerodyne Unit whose landing path enters non-approved terrain will take damage when it reaches the first hex of non-approved terrain. Damage equal to the Element's weight/size class is dealt to each Element in the Unit. Roll for critical hits normally, if applicable.



A Burr's Black Cobra's Sholagar *launches from it's carrier DropShip during lift-off.*

Crashes

Aerospace Elements destroyed in the air rain harmless debris on the battlefield, but aerospace Elements that shut down while in flight may crash. Shutdown Elements are automatically detached from their Unit. Assuming they do not crash, these Elements may briefly operate as a single-element Unit but must rejoin their Unit as soon as possible in the standard rules.

If a shutdown aerospace Element's velocity is reduced to zero, it falls one altitude level each turn, e.g. from high to medium, to low, to the ground. If it reaches the ground, it crashes into the hex it currently occupies. This is called the crash hex. The shutdown Element is automatically destroyed. Furthermore, any Element in the crash hex may take damage.

If the crashing aerospace Element is anything other than a DropShip, it may destroy a single Element on impact. The player controlling the Elements in the crash hex rolls 1D6 for each Element until a 6 is rolled or a roll has been made for all Elements. When a 6 is rolled, or when a roll has been made for all Elements, stop rolling. Any Element for which a 6 was rolled is struck by the crashing aerospace Element and destroyed. If no 6 is rolled, and rolls have been made for all the Elements in the crash hex, they escape damage.

If the crashing aerospace Element is a DropShip, all Elements in the crash hex are destroyed. In the event an entire aerospace Unit shuts down and crashes, treat it as a DropShip crash. Unlike normal damage, crash damage takes effect immediately during the Aerospace Atmospheric Movement Phase. An Element destroyed in this phase is removed immediately and will not participate in combat.

AEROSPACE SPACE MOVEMENT PHASE

The following section describes the rules governing movement in space.

SPACE MAP/GROUND MAP INTERACTION

Because space turns represent more time than ground turns, this phase occurs only every six ground turns. If the scenario includes only a space map, then the ground phases (Ground Movement and Aerospace Atmospheric Movement) are skipped and the Aerospace Space Movement Phase occurs every turn. During play, the six ground/Aerospace Atmospheric Movement Phases come first, followed by one Aerospace Space Movement Phase. Units moving between the space map and ground map are removed from the current playing area at the end of their turn and enter the new playing area at the beginning of the next appropriate Movement Phase.

Moving Between Maps

Each space map has a deployment zone identical in size to the ground maps, that is, the first five hexes from the home map edge of each player. To move between the maps aerospace Units must exit a map through a deployment zone. They will enter the other map through the corresponding deployment zone, i.e. if they exit the space map through their deployment zone they will enter the ground map through their deployment zone. If they exit the ground map through their opponent's deployment zone they will enter the space map through their opponent's deployment zone.

Moving from the space map to the ground map is free. The Unit enters through the corresponding deployment zone at high altitude during the next aerospace movement phase. Moving from the ground map to the space map costs 3 TP, and the Unit must be at high altitude. It enters through the corresponding deployment zone during the next space movement phase.

Units exiting a map through any point other than a deployment zone are removed from the game and considered destroyed for victory purposes.

SPACE MOVEMENT BASICS

Only Elements with the Spaceflight (SPC) special ability (see p. 353) can operate in the vacuum of space. Movement in space works similarly to atmospheric movement, with three important differences.

Velocity to hexes moved is a one-to-one ratio rather than a one-to-five ratio. That is, for each point of velocity, an aerospace Element must move one hex.

Without the friction of the atmosphere to slow down Elements, velocity remains constant until the Element applies thrust to accelerate or decelerate. While aerospace Elements cannot approach anything resembling the speed of light, there is no limit on velocity for game play. However, practical considerations exist.

Thrust Points and Velocity

Aside from the changes noted above, thrust and velocity work the same in space as they do in the atmosphere.

SPACE FACING CHANGE TABLE

Current Velocity	Thrust Point Cost
0-2	1
3-5	2
6-7	3
8-9	4
10	5
11	6
12+	+1 per point of velocity

Spheroid vs. Aerodyne

Once free of the constraints of atmosphere, all aerospace Elements use the same movement rules.

Facing and Heading

In space, all aerospace Elements use a facing for movement and combat. Aerospace Elements are able to make more aggressive facing changes, but they do not get to make any free turns in space. Each 60-degree facing change costs a given number of Thrust Points based on the Unit's velocity.

Aerospace Fighters and any Unit with a velocity of zero may make any number of facing changes in a single hex. When moving, DropShips and Small Craft can change facing a maximum of two hexsides before moving forward at least one hex. Units with a velocity greater than zero must move forward at least 1 hex before making a facing change.

The Space Facing Changes Table shows the cost of a single hexside facing change by velocity in Thrust Points.

Units not clearly facing a hexside at the end of the Movement Phase can be realigned to one of the two closest hexsides by the opposing player.



A Lyran Overlord*-class DropShip rapidly decelerates in order to match velocities with an asteroid for landing.*

COMBAT PHASE

The following section describes the rules governing combat.

TYPES OF ATTACKS

Each Element may normally make one attack per turn; see Turrets in the *BattleForce: Conversion Rules* (see p. 342) for an exception. Elements capable of making multiple attacks may fire at different targets with each attack. There are three types of attacks: weapon attacks, physical attacks, and aerospace attacks. This section focuses on the standard rules for weapon attacks. Physical attacks and aerospace attacks are covered—in detail—in their own sections (see *Physical Attacks*, p. 231, and *Aerospace Attacks*, p. 233).

RESOLVING WEAPON ATTACKS

The sequence for resolving weapon attacks is as follows:

1. Attack Declaration
2. Verify Line of Sight (LOS)
3. Verify Firing Arc
4. Determine Range
5. Determine To-Hit Number
6. Roll To Hit
7. Determine and Apply Damage
8. Roll For Critical Hits (If Applicable)

ATTACK DECLARATION

An attack declaration must include the attacking Element, its target, and how much the attacker will use its Overheat Value (if applicable; see *Overheating*, p. 236). All attacks must be declared before any attacks are resolved. Valid targets are other Elements, buildings (and other structures such as bridges), hexes and woods. Elements are free to attack any Element within range.

Generally, all declared attacks must be resolved, with two exceptions: First, if the modifiers make a declared attack impossible, it may be aborted; however, the Element may not choose a new target. Second, if the target Element is destroyed before all attacks against it are resolved, all remaining attacks against the target Element are assumed to have hit and need not be resolved.

Indirect Fire Attacks: Elements with the Indirect Fire (IF) special ability (see p. 349) may make an attack with this ability instead of making their normal attack(s). The attacking Element may fire at any target that is within its firing arc and at long range or less. If the attack is successful, the target Element takes damage equal to the attacker's IF rating. Additionally, a spotter is required to designate the target; this is different from TAG painting and does not require any special abilities. Any friendly Element may act as a spotter. The spotter must have LOS to the target, and any terrain modifiers that would apply if the spotter were attacking the target also apply to the indirect attack. Additionally, there is an additional +1 to-hit modifier (as shown on the Combat Modifiers Table) for making an indirect attack. Finally, each spotter may only designate one target per turn for indirect fire. Multiple attacking Elements with the IF special ability may attack the same target using the same spotter, however multiple targets require multiple spotters.

VERIFY LINE OF SIGHT

In order to attack a target, a clear line of sight (LOS) must exist between the target and the attacker. A straight line running from the center of the attacking Unit's hex to the center of the target Unit's hex defines the LOS between two Units. Any hexes through which this line passes lie along the LOS, even if the line barely crosses a given corner of a hex. If the LOS passes exactly between two hexes, the player controlling the targeted Unit decides which of the two hexes lie along the LOS. The chosen hexside is used for all attacks between those two Units for the remainder of the turn.

The hexes containing the attacking and target Units are not considered when determining LOS, and they almost never interfere with LOS (see *Water* and *Effects of Intervening Terrain*, p. 226, for the exceptions to this rule).

Short Range and Adjacent Hexes

Units in short range or in adjacent hexes always have LOS to each other, unless one Unit is completely underwater and the other is not.

Levels and Height

Terrain and Units apply the following height rules for purposes of LOS. The Unit Height Table below summarizes the height of each type of Unit.

Terrain Height and Depth

Each hex's level is marked on the map. Hexes with levels higher than 0 are also referred to as hills.

Hexes with levels lower than 0 are also referred to as sinkholes. All affect LOS in the same way. If targeting a hex, the level of the adjacent hex along the LOS between the attacker and target is considered to be 1 level lower.

Woods: Woods rise 2 levels above the level of the underlying hex they occupy. Units occupying woods hexes are standing on the underlying terrain, not on top of the trees, though VTOL and aerospace Units may occupy the airspace above the trees.

Buildings: Buildings rise above the level of the underlying hex they occupy for a number of levels equal to the level listed for the building.

UNIT HEIGHT TABLE

Type	Height*
'Mechs	2 levels
ProtoMechs, Vehicles, Infantry and Fighters	1 level
Submarines	1 depth
Large Support Vehicles and Small Craft	2 levels
Aerodyne DropShips	5 levels
Spheroid DropShips	10 levels

*A Unit's height levels (or elevations, if airborne) must be included in the level of the underlying hex when determining a Unit's total height; the height of aerospace Units for LOS purposes is irrelevant while airborne.

Water: Water hexes descend to a specific depth below the surface; the surface of the water is actually at the same level as the lowest adjacent hex. The depth represents the bottom of the body of water.

Intervening Terrain

Terrain along the LOS between the attacker and the target that actually lies within the LOS (not including the hexes occupied by the attacker and target) has the potential to be intervening terrain. The terrain of these hexes may or may not intervene in LOS, depending on the terrain's level relative to the attacker and target. Likewise, features of the terrain in the hexes along the LOS (buildings, water, woods and so on) may or may not intervene in LOS, depending on their level relative to the attacker and target. Only terrain features that have levels, such as trees and buildings, can intervene in LOS.

Terrain along the LOS between two Units intervenes if:

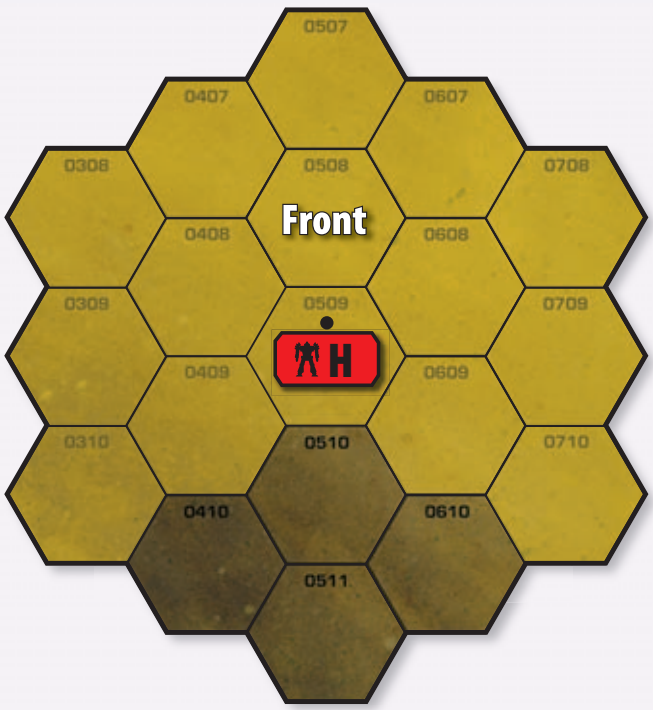
- The level of the terrain or feature is equal to or higher than the level of both Units; or
- The terrain or feature is adjacent to the attacker and equal to or higher than the attacker's level; or
- The terrain or feature is adjacent to the target and equal to or higher than the target's level.

Effects of Intervening Terrain

All intervening terrain features block LOS. Remember that the hexes containing the attacker and target are not considered for LOS purposes. Thus, woods in the hex with the target do not block LOS (but do add to-hit modifiers).

Water of Depth 2 or deeper always intervenes and blocks LOS unless both attacker and target are in Depth 2 water or deeper.

In the Standard Rules, grounded DropShips are the only non-terrain feature that blocks LOS.



• FIRING ARC DIAGRAM •

VERIFY FIRING ARC

Every Unit in *BattleForce* has a particular area into which it may fire its weapons. This is known as the firing arc; all Units except infantry and DropShips use this firing arc (see Firing Arcs Diagram, at bottom left). Firing arcs extend to the edge of the battlefield in the direction indicated by the diagrams. If the target Unit is not within the attacker's firing arc, then the attack cannot be made.

360-Degree Firing Arcs: Infantry (including battle armor) and turret mounted weapons have a 360-degree firing arc and may fire in any direction. All other non-aerospace Units have the firing arc shown below.

DETERMINE RANGE

BattleForce uses fixed range brackets for all weapon types. To determine range, find the shortest path to the target and count the hexes between target and attacker, starting with the hex adjacent to the attacker's hex along the line of sight and including the

RANGE TABLE

STANDARD RANGES	
Distance	**Range**
0-1 hexes	Short
2-4 hexes	Medium
5-8 hexes	Long

UNDERWATER RANGES	
Distance	**Range**
0 hexes	Short
1-2 hexes	Medium
3-4 hexes	Long

AIR-TO-AIR RANGES	
Distance	**Range**
0-32 hexes	Short
33-64 hexes	Medium
65-107 hexes	Long
108-133 hexes	Extreme

SPACE RANGES (STANDARD WEAPONS)	
Distance	**Range**
0-2 hexes	Short
3-4 hexes	Medium
5-6 hexes	Long
7-8 hexes	Extreme

SPACE RANGES (CAPITAL WEAPONS)	
Distance	**Range**
0-4 hexes	Short
5-8 hexes	Medium
9-13 hexes	Long
14-17 hexes	Extreme

target's hex. This total number of hexes between attacker and target (including the target's hex) is the range.

Compare this number to the Range Table to determine range.

Each attack does a fixed amount of damage at each of the indicated *BattleForce* ranges. Ground Elements have 3 ranges; aerospace Elements have 4 in the Standard Rules. Some Elements do not have the ability to do damage at every range. This is indicated by a dash or a zero on the record sheet for that range bracket. If the Element does not have the ability to do damage at a given range, it may not attack at that range.

DETERMINE TO-HIT NUMBER

Once a player has determined that his or her target is within LOS and within the attacking Unit's firing arc, he or she must determine the to-hit number. This is the number that the player's die roll must equal or exceed for a successful shot. Though LOS and range are determined from Unit to Unit, the

TO-HIT MODIFIERS TABLE

RANGE MODIFIERS	
Range	**Modifier**
Short	+0
Medium	+2
Long	+4
Extreme	+6[4]

TARGET MOVEMENT MODIFIER[1]	
Target's Available MP	**Modifier**
0-2	+0
3-4	+1
5-6	+2
7-9	+3
10-17	+4
18+	+5

TERRAIN MODIFIERS[2]	
Terrain	**Modifier**
Depth 1 Water	+1[3]
Light Woods	+1
Heavy Woods	+2

PHYSICAL ATTACKS MODIFIER	
Physical Attack Type	**Modifier**
Charge	+2
Death From Above	+3
Melee Physical Attack	+1
Standard Physical Attack	+0
Target is Grounded DropShip	–2

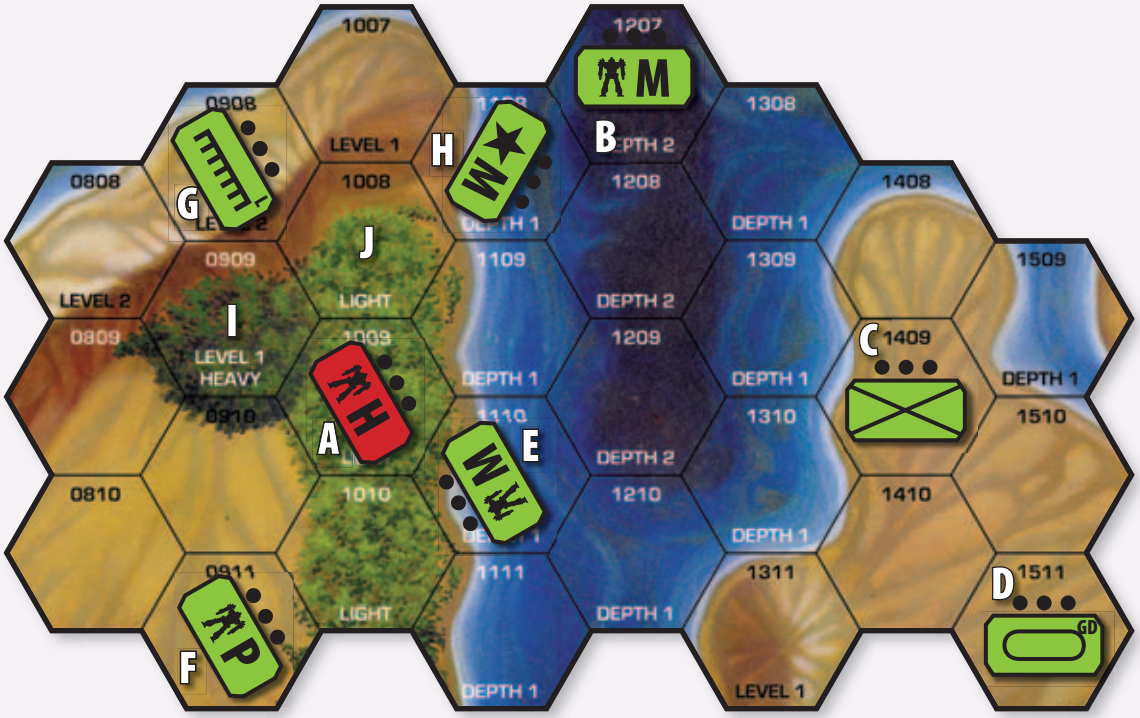
[1]Modifier is based upon available MP modified by heat level and critical hits if applicable. MP expended are irrelevant. Does not apply to aerospace Elements.
[2]Applies when target occupies a hex with the indicated terrain type.
[3]Does not apply if attacker is submerged.
[4]Only aerospace Elements use Extreme range in the standard rules.
[5]May apply multiple times. Does not apply to physical attacks
[6]Applies for ground-to-air attacks against airborne aerospace, VTOL and WiGE targets only.
[7]Disregard if the IndustrialMech has the Advanced Fire Control special ability (see p. 345).
[8]If Support Element has basic fire control, replace with +1 modifier. If Support Element has advanced fire control, replace with +0 modifier.
[9]If the spotter is also making an attack, apply this modifier to the spotter's attack, and the indirect attack (see *Indirect Fire Attacks*, p. 225).
[10]Applies to all aerospace Elements that are airborne or in space. Apply an angle of attack modifier as follows: Attacks against the Nose(+1), Sides (+2), or Aft (+0).

MISCELLANEOUS MODIFIERS	
Attacker	**Modifier**
Attacking Indirectly	+1[4]
Fire Control Hit	+2[5]
Flak Special Ability (see p. 349)	–2[6]
IndustrialMech	+1[7]
Attacking Multiple Targets	+1[13]
Support Element	+2[8]
Is Grounded Aerospace Element	+2[14]
Striking	+2
Strafing	+4
Altitude Bombing	+3
Dive Bombing	+2
Spotting for Indirect Fire	+1[9]
Overheated	+Heat Level [1-3]

TARGET TYPE MODIFIER	
Target Element Type	**Modifier**
Airborne Element	+1/+2/+0[10]
Battle Armor	+1
Jump Capable	+1
Large Support Element	–1
ProtoMech	+1
Grounded Small Craft	–1[16]
Grounded Aerospace Element	*[15]

TARGET MODIFIER	
Target	**Modifier**
Has Stealth Armor	Varies[11]
Is Shutdown/Immobile	–4[12]

[11]Battle armor targets: Add +1 at short and medium ranges. Add +2 at long range. All others: +0 at short range, +1 at medium range and +2 at long range.
[12]Includes bridges, buildings, grounded DropShips, hexes and woods. Shutdown Elements do not get a target movement modifier. Grounded DropShips do not get an angle of attack modifier.
[13]Applies to all attacks after the first. DropShips ignore this modifier.
[14]Aerospace Elements that are not DropShips add a +2 to-hit modifier when on the ground.
[15]Grounded aerospace fighters, conventional fighters, size class 1 & 2 fixed-wing support elements, and size class 1 & 2 airships do not get an angle of attack modifier, but instead get a target movement modifier as if they had a MV equal to 1/2 their TP (rounded down).
[16]Grounded Small Craft do not get an angle of attack modifier.



• TO-HIT ROLL DIAGRAM •

to-hit number is calculated for each Element individually.

The Base To-Hit number for all attacks is the attacking Element's Skill Rating. This number is then modified by range, target's available movement, terrain features, Unit type and other miscellaneous situations as shown on the To-Hit Modifiers Table. All modifiers are cumulative unless otherwise stated. Shutdown Elements do not receive a target movement modifier.

In the To-Hit Roll Diagram, Alice's 'Mech lance is in the hex marked A on the Wide River map. The 'Mech she is attacking with has a Skill Rating of 3. It cannot see Aaron's 'Mech Unit in Hex B, as the Unit is completely submerged. It can see the conventional infantry Unit in Hex C, the Large Support Vehicle in Hex D, the 'Mech Unit in Hex E and the ProtoMech Point in Hex F, but not the vehicle in Hex G. It can, however, see the aerospace Unit at low altitude in Hex H. Alice starts with her Skill Rating of 3 and applies the rest of the modifiers.

Here are her to-hit numbers:

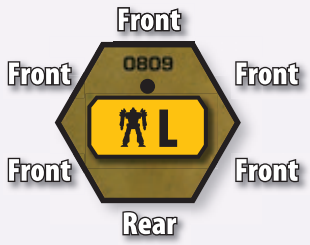
- *The infantry in Hex C are 4 hexes away at medium range, which adds a +2 modifier. They have 1 MP, giving them a target modifier of +0. The Modified To-Hit Number is 5 [3 (Skill Rating) + 2 (medium range) = 5].*
- *The Large Support Element in Hex D is 5 hexes away, at long range, which adds 4. It has 5 MP, giving it a target modifier of +2. It is a Large Support Element, which subtracts 1. The Modified To-Hit Number is 8 [3 (Skill Rating) + 4 (long range) + 2 (target movement) –1 (Large Support Element) = 8].*
- *The target 'Mech in Hex E is 1 hex away, at short range, which doesn't add a modifier. It has an MP of 6(j), giving it a target modifier of +2. Next, Alice adds 1 because the target is jump capable, and another 1 because it is in water. The Modified To-Hit Number is 7 [3 (Skill Rating) + 0 (short range) + 2 (target movement) + 1 (jump) + 1 (target in water) = 7].*
- *Though Alice's Unit has LOS to the ProtoMech Point in Hex F, it is outside of her firing arc (and the woods in hex 1010 might intervene; defender's choice), and so no shots are possible.*
- *Likewise, Alice's Unit cannot see the vehicle Unit in Hex G because the woods in Hex I or J intervene. The player controlling the vehicle Unit decides which hex intervenes, as the LOS falls evenly between each hex.*
- *Finally, because LOS always exists between ground Units and airborne aerospace Units, Alice's Unit can see the fighters in Hex H. If the aerospace fighters were a Naval Unit in the same hex, their controlling player would get to decide whether or not the woods in Hex J intervene. The Unit is 2 hexes away, but since it is at low altitude, Alice increases the range from medium to long and adds a range modifier of +4. Aerospace fighters have no MP and so do not get a target movement modifier, but they do get an Angle of Attack modifier. The Modified To-Hit Number is 7 [3 (Skill Rating) +4 (long range) + 2 (attack against an aerospace fighter's side) = 9].*

ROLL TO-HIT

Roll 2D6 for each Element and compare the total to the modified to-hit number identified in the previous step. If the dice roll equals or exceeds the modified to-hit number, the attack is successful. Otherwise, the attack fails.

DETERMINE AND APPLY DAMAGE

When an attack is successful, its damage is applied immediately, but the damage does not take effect until the End Phase. Before damage can be applied, the attack direction and amount of damage must be determined.

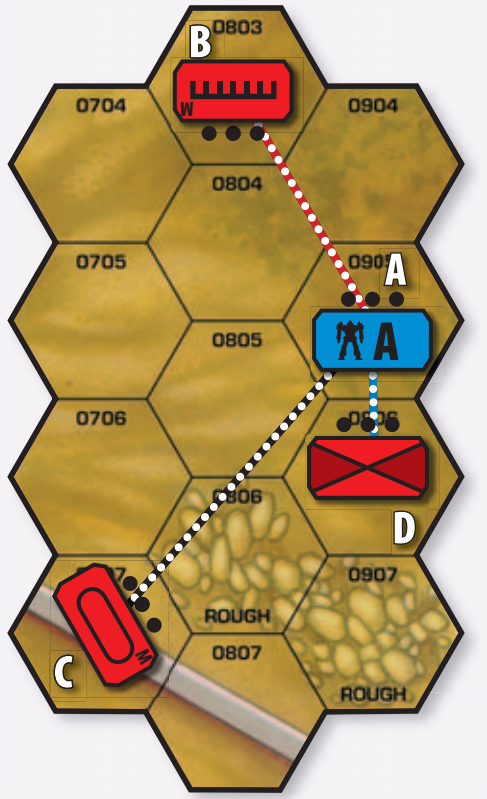


• ATTACK DIRECTION DIAGRAM •

Attack Direction

Most Elements use the Attack Direction Diagram (above) to determine whether an attack hits from the front or rear. Attacks made against infantry (including battle armor) and grounded spheroid craft always strike from the front. Airborne spheroid craft have special rules when in the atmosphere (see *Aerospace Attacks*, p. 233). All other Units (including non-spheroid aerospace Elements in atmospheric flight or space) use the Attack Direction Diagram.

To determine whether the attack hits front or rear, lay a straightedge from the center of the attacker's hex to the center of the target's hex. Compare the hexside crossed by the straightedge to the Attack Direction Diagram to find the side of the Unit hit by the attack. If the straightedge crosses at the intersection of two hexsides, the target chooses which side is hit by the attack. If both attacker and target are in the same hex, the attack direction is always front.



• ATTACK DIRECTION EXAMPLE DIAGRAM •

As shown in the Attack Direction Diagram, there is only one hexside from which an attack will strike a target in the rear.

Physical Attacks: The attack direction for physical attacks is always front.

In the Attack Direction Example Diagram, at bottom left, Lara's 'Mech Unit in Hex A of the BattleForce map is getting pounded by a number of Units. The vehicle Units in hexes B and C will both strike her Unit from the front (if their attacks are successful). The battle armor Unit in Hex D will strike her Unit from the rear (and do an extra point of damage) if its attack succeeds.

Amount of Damage

The base amount of damage dealt from a successful attack depends on the Element's type. Aerospace and infantry Elements use the S, M, L, or E Damage Values. All other Elements use the Element's Base S, M, L or E Damage Value plus the S, M, L or E Damage Values of any AC, LRM, or SRM weapon systems (if applicable). If the target is at short range, the base damage is the Element's combined S value. For a target at medium range, use the combined M value. For a target at long range, use the combined L Damage Value, and for a target at extreme range, use the combined E Damage Value. In the Standard Rules only aerospace Elements use extreme range. For example, an Element with Base: 1/1/1/— and AC: 2/2/—/— would do 3 points of damage at short and medium ranges, 1 point at long range, and no damage at extreme range. Any attack striking a target in the rear does 1 additional point of damage.

All Elements in *BattleForce* only have one armor facing against which damage is applied. The distinction between a shot striking front or rear is only made to determine the total amount of damage applied.

Elements that track heat may inflict additional damage on their targets by overheating; however, the decision to do so must be made when the attack is declared (see *Overheating*, p. 230).

If an Element has the indirect fire (IF) special ability (see p. 349) and is making an indirect attack, use the indirect fire rating instead of the damage for the given range.

Damage Underwater

Elements underwater take only 50 percent of normal damage (round down to a minimum of 1) from each attack; however, each attack generates a Critical Hit chance regardless of whether or not structure is damaged (see *Roll For Critical Hits*, p. 236). Additionally, if an Element that is underwater loses all of its armor, it is destroyed. Torpedo attacks do full damage underwater.

Heat Special Ability

Some Elements have a preponderance of heat-generating weapons. This is reflected on the Element's stat block by the heat special ability (see p. 349). This ability includes a numeric rating—for example, HT1. If an Element with this special ability successfully strikes a target with a weapon attack, the target Element will gain heat in the End Phase of the turn in which it was struck. No Element may gain more than 2 points of heat per turn in this fashion. If the Element does not use a heat scale, it receives damage equal to the attacker's heat rating instead. For example, a combat vehicle struck by a weapon attack from an attacker with HT2 will take 2 additional points of damage.

APPLYING DAMAGE

To apply damage from an attack, begin with the amount of damage the attack inflicts and start at Step 1. Answer each question yes or no, and follow the instructions.

1. Does the Element have armor remaining?

Yes: Check off one armor circle on the Armor Diagram for every point of damage taken, until all damage is applied or all armor is destroyed. Go to Step 2.

No: Proceed to Step 3.

2. Is there damage remaining?

Yes: Go to Step 3 to allocate remaining damage.

No: Go to Step 6.

3. Does the Element have structure remaining?

Yes: Check off one structure circle for every point of damage taken, until all damage is applied or all structure is destroyed. Go to Step 4.

No: Proceed to Step 4.

4. Is there damage remaining?

Yes: The Element is destroyed.

No: Go to Step 5.

5. Does the Element have structure remaining?

Yes: Roll once on the Determining Critical Hits Table, below**.** Go to Step 6.

No: The Element is destroyed.

6. Does the Element have the BAR special ability (see p. 346) or does the damage from a single attack exceed the Element's damage threshold?

Yes: Roll once on the Determining Critical Hits Table, below. The attack is finished.

No: Go to Step 7.

7. Is the Element a vehicle?

Yes: Roll once on the Determining Motive Systems Damage Table, p. 232. The attack is finished.

No: The attack is finished.

Kevin's damaged Ontos Heavy Tank (3058 version) has been hit by shots from a BNC-5S Banshee *and a HGN-732* Highlander. *After checking the attack direction, Kevin sees that all the shots will strike his Ontos on the front. The Banshee is attacking from medium range and will do 3 points of damage. Kevin marks off 3 armor circles, leaving 1 armor and 3 structure circles for his Ontos. The Highlander is also attacking from medium range and also does 3 points of damage. Kevin marks off the last point of armor on the Ontos and 2 points of structure, leaving it with 1 point.*

Kevin informs his opponent that she has a chance for a Critical Hit. She rolls 2D6, getting a 9, and consults the Critical Hit Table. It's a Fire Control Hit, which means all further shots from the Ontos will suffer a +2 to-hit modifier.

ROLL FOR CRITICAL HITS

Infantry and battle armor Elements cannot suffer critical hits. All other Elements can. Any time a hit damages structure (or any time a Unit protected by BAR 1–9 or Commercial Armor suffers damage), a Critical Hit may occur. Aerospace Elements may also suffer critical hits if the damage from a single attack exceeds their damage threshold.

To determine whether an Element takes a Critical Hit, as well as the type of hit taken, roll 2D6 and consult the Determining Critical Hits Table. If the target Element is an IndustrialMech, roll 2D6 twice and apply both results.

Mark clearly any Critical Hits against an Element on the record sheet. The effects of Critical Hits are permanent.

If the given Critical Hit effect does not apply to the Unit type in question (for example, a weapon hit on an Element that has all its Damage Values reduced to zero), or a critical hit that can only be hit once per Element is hit a second time, apply 1 additional point of damage instead; do not roll for an additional Critical Hit as a result of this damage.

CRITICAL HIT EFFECTS

The nature and effect of each critical hit is described below:

Ammo Hit

The Element is destroyed unless it has CASE or ENE. If the Element has CASE it takes 1 point of damage (roll for critical hits

DETERMINING CRITICAL HITS TABLE

2D6 Roll	'Mech*	ProtoMech	Vehicle	Aerospace†	DropShip‡
2	Ammo Hit	Weapon Hit	Ammo Hit	Fuel Hit	KF Boom Hit
3	Engine Hit	Weapon Hit	Crew Stunned	Fire Control Hit	Docking Collar Hit
4	Fire Control Hit	Fire Control Hit	FCS Hit	Engine Hit	No Critical Hit
5	No Critical Hit	MP Hit	FCS Hit	Weapon Hit	Fire Control Hit
6	Weapon Hit	No Critical Hit	No Critical Hit	No Critical Hit	Weapon Hit
7	MP Hit	MP Hit	No Critical Hit	No Critical Hit	Thruster Hit
8	Weapon Hit	No Critical Hit	No Critical Hit	No Critical Hit	Weapon Hit
9	No Critical Hit	MP Hit	Weapon Hit	Weapon Hit	Door Hit
10	Fire Control Hit	Proto Destroyed	Weapon Hit	Engine Hit	No Critical Hit
11	Engine Hit	Weapon Hit	Crew Killed	Fire Control hit	Engine Hit
12	Head Blown Off	Weapon Hit	Engine Hit	Crew Killed	Crew Hit

*Roll 2D6 twice for IndustrialMechs. Apply both Critical Hits. †Includes Fixed-Wing Support Elements, Airships and Conventional Fighters ‡Includes Small Craft

normally if this damages structure). If the element has the CASE II or Energy (ENE) special ability (see p. 349) ignore this hit. No extra damage is applied.

Crew Hit

The first crew hit adds a +1 to-hit modifier to all shots. The second crew hit adds an additional +2 (for a total of +3). The third crew hit adds an additional +2 (for a total of +5). The fourth crew hit eliminates the Element.

Crew Killed

The Element's crew has been killed. It is eliminated from the game.

Crew Stunned

The Element may not make any attacks during the next turn.

Docking Collar Hit

No effect in *BattleForce: Standard Rules*. This item may only be hit once per Element.

Door

No effect in *BattleForce: Standard Rules*. All doors on one randomly determined cargo bay are damaged and no longer function. Elements may no longer enter or exit this cargo bay.

Engine Hit

The Element's power system has been damaged.

DropShip/Small Craft: The first engine hit reduces Thrust Points by 25 percent (round normally, with a minimum of 1 point lost). The second hit reduces Thrust Points to 50 percent of their original total (round normally, with a minimum of 1 additional point lost). The third hit reduces the Element's TP to zero and shuts down the Element.

'Mechs: The engine hit adds 1 heat point to all weapons fire, and so the affected Element overheats by 1 (without doing overheat damage) every time it fires weapons. The second hit destroys the Element.

Aerospace/Conventional Fighters & Fixed-Wing Support Elements: These Elements lose 50 percent of their thrust (round down, with a minimum of 1 point lost). The second hit reduces the Element's TP to zero and shuts down the Element.

Vehicles: The first engine hit reduces its movement by 50 percent and all Damage Values by 50 percent (round down to a minimum of zero for both). The second engine hit destroys the Element

Fire Control Hit

Some mechanism for controlling shots has been damaged. This could represent anything from an arm actuator to sensors. Each hit adds a cumulative to-hit modifier of +2 for all subsequent shots by the damaged Element. This modifier does not apply to physical attacks.

Fuel Hit:

The Element is destroyed.

Head Blown Off

The Element is eliminated from the game.

KF Boom Hit

No effect in *BattleForce: Standard Rules*. This item may only be hit once per Element.

MP Hit

Something related to the Element's ability to move has been damaged. The affected Element loses 50 percent of its current MP (50 percent of Thrust Points for aerospace Elements), rounding normally with a minimum of 1 point lost. An Element reduced to zero MP cannot move. An Element reduced to zero thrust can no longer adjust its velocity. If airborne at the time (but not in space), the Element will start dropping altitude levels once its velocity is reduced to zero and will eventually land or crash.

Proto Destroyed

The Element is eliminated from the game.

Thruster Hit

All turns cost one additional TP. This item may only be hit once per Element.

Weapon Hit

This hit represents the destruction of a number of weapons on the affected Unit. All Damage Values are reduced by 1 (to a minimum of zero). If the Element has multiple attacks (such as a DropShip), reduce all Damage Values for one randomly determined attack arc, rather than for all attacks. Capital Missile attacks cannot be reduced in this fashion.

ROLL FOR MOTIVE SYSTEMS DAMAGE

Vehicles are inherently more vulnerable than BattleMechs. Whenever a vehicle Element (combat or support) suffers damage (that is once for each hit, *not* once per point of damage) roll 1D6 and consult the Determining Motive Systems Damage Table (see p. 232).

If the result is a 5 or 6, roll consult the Effect of Motive Systems Damage. Roll 2D6 and add the modifiers as listed (all are cumulative). A vehicle may only suffer each effect once per game. A VTOL or WiGE that is reduced to zero movement as a result of motive systems damage—while it is at least one elevation above the underlying terrain—crashes in the hex it occupies. The Element takes 1 point of damage (roll for critical hits normally, if applicable) and is immobilized.

PHYSICAL ATTACKS

Unless the target is a grounded DropShip or an Element with the Large (LG) special ability (see p. 350), these attacks may only be made when the attacker and target are in the same hex. DropShips and Elements with the Large (LG) special ability may be attacked from adjacent hexes. There are three types of physical attacks: Standard, Melee and Special. 'Mechs may make all three types of physical attacks. ProtoMechs may only make Standard physical attacks, and vehicles may only attempt the Charge Special physical attack.

Standard Physical Attacks

Standard physical attacks consist of punches and kicks where the 'Mech or ProtoMech uses its limbs to inflict damage on a target.

DETERMINING MOTIVE SYSTEMS DAMAGE TABLE

CHANCE FOR MOTIVE SYSTEM DAMAGE	
1D6 Roll	**Result**
1-4	No Effect
5-6	Roll for Motive Systems Effect (below)

EFFECT OF MOTIVE SYSTEMS DAMAGE	
2D6 Roll	**Result**
2-7	No Effect
8-9	–1 MV; The Element's MV is reduced by 1 for the remainder of the game
10-11	–1/2 MV; Multiply the Element's MV by 0.5 and round down
12	The Element is immobilized

MODIFIERS*	
Tracked/Naval	+0
Wheeled	+2
Hit from the rear	+1
Hovercraft/Hydrofoil	+3
VTOL/WiGE	+4

*Applies to Effects of Motive Systems Damage only. All modifiers are cumulative.

Melee Physical Attacks

Only 'Mechs with the Melee (MEL) special ability (see p. 350) may make Melee physical attacks. The Element uses a weapon to augment its normal physical attack damage. Elements that have the Melee (MEL) special ability may not choose to make a Standard physical attack instead.

Special Physical Attacks

Charge and Death From Above (DFA) are more aggressive and risky physical attacks. Only 'Mechs and vehicles may make Charge attacks, and only 'Mechs may make DFA attacks. Only one Special physical attack may be attempted per target, per turn.

RESOLVING PHYSICAL ATTACKS

Physical attacks follow a process similar to weapon attacks, with several steps omitted. It is not necessary to verify LOS or firing arc, or to determine range or attack direction. Physical attacks may not take place if no LOS could exist, such as when the attacker is under water and the target is not, or the attacker and target are on different levels in the same building hex. Physical attacks always strike from the front.

The process for resolving physical attacks is:

1. Determine To-Hit Number
2. Roll To-Hit
3. Determine and Apply Damage
4. Roll For Critical Hits (If Applicable)

Determine To-Hit Number

The Base To-Hit number for all physical attacks is the Element's Skill Rating. It is modified by the physical attack type, target's available movement, terrain features, and other miscellaneous situations as shown on the To-Hit Modifiers Table. Modifiers are cumulative unless otherwise stated.

Roll To Hit

Roll 2D6 for each Element and compare the total to the modified to-hit number identified in the previous step. If the dice roll equals or exceeds the modified to-hit number, the attack is successful. Otherwise, the attack fails.

Determine and Apply Damage

When an attack is successful, its damage is applied immediately, but the damage does not take effect until the End Phase. All physical attack damage is applied in the same fashion as weapon attack damage.

Standard and Melee physical attack damage is equal to an Element's weight class. Elements with the Melee (MEL) special ability (see p. 350) add 1 to this number. Special physical attacks use different rules for determining damage, as described below.

Charge Attacks

In a Charge attack, the attacking Element ('Mech or vehicle) hurls itself into its target, using its mass and velocity to do damage. A successful Charge always damages attacker and target. The charging Element does damage based on its weight and MP, as shown on the Charge Damage Table. Multiply the attacking Element's available MV (not MV expended) by the number shown on the table and round normally. The result is the amount of damage inflicted on the target Element; if the charging element is a vehicle with the Engineering (ENG) or Saw (SAW) special ability (see pp. 349 and 352, respectively), round up to the next whole number instead. The attacking Element must be capable of moving to attempt a Charge attack.

CHARGE DAMAGE TABLE

Element Weight	Multiply MP by
Light	.25
Medium	.50
Heavy	.75
Assault	1

If the attack is successful, the attacking Element suffers damage equal to the target's weight/size class. If the attacking Element is a vehicle of any type, make an additional roll on the Determining Motive Systems Damage Table (above left) in addition to this damage. This does not count as an attack for the targeted Element, and it may attack normally during its Combat Phase.

Death From Above Attacks

Given the ability to jump, it was only a matter of time before MechWarriors started leaping into the air in their 'Mechs in an attempt to squash opponents. It's not pretty. It's not even all that effective, but it makes for quite a show. In order to execute a Death From Above attack, the attacking 'Mech must have the jumping movement mode and be capable of moving. Airborne aerospace Units may not be targeted by this attack.

The attacking Element does damage to the target equal to its Charge damage +1 (see the Charge Damage Table, above). If the attack is successful, the attacking Element suffers damage equal to its weight/size class. This does not count as an attack for the targeted Element, and it may attack normally during its Combat Phase. If the attack is unsuccessful, the attacking Element suffers its weight/size class +1 in damage.

If the target can sustain Critical Hits, make one roll for Critical Hits regardless of whether or not the target suffered structure damage. If the target suffered structure damage as a result of the attack, make an additional roll for Critical Hits.

Roll For Critical Hits

Physical attacks may inflict critical hits just like weapon attacks (see *Roll for Critical Hits*, p. 230).

AEROSPACE ATTACKS

There are five types of aerospace attacks: Ground-to-Ground, Ground-to-Air, Air-to-Air, Air-to-Ground and Space. Except as otherwise stated, these attacks follow the same resolution process as weapon attacks. For brevity, only steps where these rules differ are repeated here. Several special case rules that apply to each type of attack are described in detail in the appropriate section.

Angle of Attack Modifier: Although attacks against aerospace Elements do not add a target movement modifier, they do add a modifier based upon the hexside through which the attacking element fires. Verify LOS from the attacker to the target aerospace Element and refer to the Angle of Attack Diagram for the appropriate modifier.

Aerospace Fighters: These Elements, along with conventional fighters, airships, and fixed-wing support Elements, use the aerospace firing arc as shown below. They may make one type of attack per turn.

DropShips: Spheroid DropShips may make one attack in each firing arc: nose, left side, right side, and aft. Aerodynes may make one attack in each firing arc: nose, left wing, right wing and aft. These arcs are defined as shown in the diagrams below and on page 236.

Capital Weapons: Elements equipped with capital (and sub-capital) weapons may use these as an additional independent weapon attack (per firing arc equipped with these weapons). Capital weapons may not be fired in the atmosphere in *BattleForce: Standard Rules*.



• NON-DROPSHIP AEROSPACE FIRING ARCS DIAGRAM •

• GROUNDED SPHEROID DROPSHIP FIRING ARCS DIAGRAM •





• AERODYNE DROPSHIP FIRING ARCS DIAGRAM •

Ground-to-Ground Attacks

The basic weapon attack rules cover most forms of ground-to-ground fire (those not involving aerospace Elements at all). These rules expand on the resolution for such attacks where grounded (or landed) aerospace Units deliver (or are targeted by) other Units that are not in flight, and use the same basic combat rules, except as follows:

Verify Firing Arc: Aerospace Elements have different firing arcs from other Elements, as shown in the aerospace firing arc diagrams, p. 233. The process for determining whether or not a target is within an Element's firing arc is unchanged.

Aerospace Fighters: Grounded aerospace fighters (including conventional fighters, small craft, and fixed-wing support Elements) use their normal firing arcs when on the ground, but suffer a +2 to-hit modifier for weapons attacks.

Spheroid DropShips: When grounded, spheroid DropShips may make one weapon attack for each side arc (right and left). Grounded spheroid DropShips may not fire nose- or aft-arc weapons against ground Units in *BattleForce: Standard Rules*.

Aerodyne DropShips: Grounded aerodyne DropShips may make up to four attacks: one each into the nose, left wing, right wing, and aft arcs.

On the ground, both aerodyne and spheroid DropShips are highly stable platforms and gain a –2 to-hit modifier to their weapons attacks (except against airborne aerospace Elements), as shown on the To-Hit Modifiers Table, p. 227.

Determine To-Hit Number: Grounded DropShips (but not fighters or other aerospace Units) are considered immobile targets. Thus any attacks against them receive a –4 to-hit modifier, and an angle of attack modifier is not applied. Grounded aerospace fighters, conventional fighters, size class 1 & 2 fixed-wing support elements, and size class 1 & 2 airships do not get an angle of attack modifier, but instead get a target movement modifier as if they had a MV equal to 1/2 their TP (rounded down).

Ground-to-Air Attacks

A Ground-to-Air attack is any attack by a Unit that is currently on the ground (or landed) against an aerospace Unit that is in flight. Any ground-based Unit and grounded (or landed) aerospace Unit may execute a Ground-to-Air attack against an airborne aerospace Unit, with the following modifications applied to the basic combat rules:

Attack Declaration: In addition to its Ground-to-Ground attacks, a grounded spheroid DropShips may make a Ground-to-Air attack (in a 360-degree arc, including directly above) using their nose arc weapons only. No other aerospace Elements may make Ground-to-Air attacks. All other Elements may make either a Ground-to-Ground attack or a Ground-to-Air attack, but not both in the same turn.

Verify Line of Sight: All ground or landed Units (so long as they are not completely submerged in water) have Line of Sight to an airborne target.

Determine Range: Ground-to-Air attacks use the target Unit's position at the end of the Movement Phase to find range. Count the range between attacker and target as normal. Increase the range one bracket if the target is at low altitude (i.e. from Short to Medium) or two brackets (i.e. from Short to Long) if it is at medium altitude. Aerospace Units at high altitude may not be attacked by ground (or grounded) Elements.

If the aerospace Unit is attacking anything in the ground Unit's hex, the ground Unit may attack the aerospace Unit at short range.

Determine To-Hit Number: Aerospace Elements do not receive a target movement modifier when in flight. The base to-hit number is the attacking Element's skill level, modified by the angle of attack modifier and any other appropriate modifiers from the To-Hit Modifiers Table, p. 227).

Remember to modify the to-hit number for the Flak (FLK) special ability (see p. 349) if applicable.

Determine and Apply Damage: If an aerodyne aerospace Element flew over the attacking ground Unit during its Movement Phase, any successful Ground-to-Air attack will do only normal damage, i.e., the aft of the aerodyne Element may not be struck by the Ground-to-Air attack. If a spheroid aerospace Element flew over the attacking Unit during its Movement Phase (or ended its movement above the attacking Unit), then any successful Ground-to-Air attack will do 1 additional point of damage. If the target aerodyne aerospace Unit did not fly over the ground Unit, determine the attack direction based on the position and facing of the aerospace Unit at the end of its movement.

Air-to-Air Attacks

An Air-to-Air attack is delivered only between aerospace Units in flight in the atmosphere. For an aerospace Element to attack an airborne VTOL or WiGE it must make an Air-to-Ground attack. The following rules modifications apply when resolving a Unit's Air-to-Air attack:

Spheroid DropShips: When airborne, Spheroid DropShips may employ left- and right-side arc weapons against airborne Units. They may also employ their nose weapons against any Unit directly above them or any Unit adjacent to them and at a higher altitude. They may also fire their aft weapons at any Unit directly below them or any Unit adjacent to them and at a lower altitude. Modify the range for different altitude levels as normal.

Aerodyne DropShips: Aerodyne DropShips may make up to 4 attacks: one each into the nose, left wing, right wing, and aft arcs.

Verify Line of Sight: Air-to-Air Units always have Line of Sight to each other.

Determine Range: Because of the scale difference at altitude, Air-to-Air attacks have a significant range advantage over all other attacks. Use the Air-to-Air Range Table for these attacks.

Units at the same altitude levels attack as normal. For Units at different altitude levels, increase the range by one range bracket (e.g. Short to Medium) for each level of difference. Apply the modifier for the increased range bracket. For example, a Unit at low altitude attacking a Unit 5 hexes away at medium altitude would make the attack as if the target were at medium range.

Determine To-Hit Number: The base to-hit number is the attacking Element's skill level, modified by the angle of attack modifier and any other appropriate modifiers from the To-Hit Modifiers Table, p. 227).

Air-to-Ground Attacks

Air-to-Ground attacks can be delivered only by an attacker that is in flight, against any ground-based target (including airborne VTOLs and WiGEs) or landed aerospace Unit. A Unit can execute one of four types of Air-to-Ground attacks in a combat turn: Bombing, Strafing, Striking or Spheroid DropShip. The following modifications apply to the basic combat rules to resolve such attacks:

Attack Declaration: When making any Air-to-Ground attack, the particular type of Air-to-Ground attack must be declared. For non-DropShip Air-to-Ground attacks, the aerospace Unit must have flown over (or ended its movement in) its target's hex, or the attack cannot be made.

When an aerospace Unit executes an Air-to-Ground attack, any or all of the Elements in the Unit may participate in the attack, and any visible Element or hex may be targeted unless otherwise specified by the attack type. Though submerged Units cannot be targeted directly (as no Line of Sight exists), the hex may be targeted for a Bombing attack.

- **Bombing Attacks (Altitude Bombing):** Altitude bombing allows an aerospace or conventional fighter or fixed-wing support Unit to attack a continuous row of hexes along its flight path. Altitude bombing can attack one hex for each bomb the Element carries. The Element must drop one bomb in each hex, and all targeted hexes must be adjacent. If the Element carries several types of bombs, the pilot chooses which bombs are dropped on which hexes. Bombs are area-effect weapons, and will attack all Elements in a target hex. The bombing Unit must be at low or medium altitude.
- **Bombing Attacks (Dive Bombing):** An aerospace Unit performing a dive bomb can drop any number of bombs in a target hex. Bombs are area-effect weapons, and will attack all Elements in a target hex. The attacking Unit must be at medium altitude, and drops to low altitude in the end phase of the current turn.
- **Strafing Attacks:** In a strafing run, the craft fires its weapons repeatedly at the ground to saturate two contiguous hexes. A Unit making a strafing attack chooses two target hexes (which must be adjacent and follow the flight path of the aerospace Unit) and makes attacks against every Element (friend or foe) in both hexes. The attacking Unit must be at low altitude,
- **Striking Attacks:** The striking attack is an elementary and extremely accurate Air-to-Ground attack in which each craft fires all its weapons at a single target. A Unit making a striking attack chooses one target Unit; then each Element of the attacking Unit makes a single attack against the same target Element. The attacking Unit must be at low altitude.
- **Spheroid DropShip Attacks:** Spheroid DropShips may make an Air-to-Ground attack from medium or low altitude using their aft weapons arc and receive a 360-degree field of fire (including directly below) for such attacks..

Verify LOS: Airborne Units always have LOS to ground Units (so long as the ground Units are not completely submerged or underground). While submerged Units may not be targeted, the hex they occupy may be targeted by bombing attacks.

Determine Range: Bombing, Strafing and Striking attacks always occur at short range. Spheroid DropShip Air-to-Ground attacks compute their range using Ground-to-Ground ranges as if the DropShip were landed in the hex beneath it. Increase the range bracket by one if the DropShip is at low altitude (e.g. from Medium to Long) or by two if the DropShip is at medium altitude. DropShips at high altitude may not make Air-to-Ground attacks.

Determine To-Hit Number (Bombing): Use the Element's Skill Rating as the Base To-Hit number, and the attacker modifier for attack type. Include modifiers for the bombing type, but do not apply modifiers for immobile targets or the target hex's terrain.

Determine To-Hit Number (All Other Air-to-Ground Attacks): When targeting an Element, use the attacking Element's Skill Rating as the Base To-Hit number and apply the attacker modifier for attack type (and all other modifiers as appropriate). Remember that grounded DropShips are also considered immobile targets.

When targeting a hex, use the attacking Element's Skill Rating as the Base To-Hit number, and apply the attacker modifier for attack type plus a –4 modifier for an immobile target.

Bombing Scatter: If a bombing attack fails to hit a target hex, the missed bombs will scatter before exploding. To determine the direction of scatter, the attacker must roll 1D6 and determine the direction of scatter based on the Scatter Diagrams below. For Altitude Bombing, a 3–4 result indicates the bombs will fall in the direction of flight; for Dive Bombing, the 1 result indicates a scatter in the direction of flight. After finding the direction of scatter, the attacker rolls 1D6 again to determine the number of hexes by which the attack deviates from its target. On a result of 1–3, the bomb deviates by 1 hex. On a roll of 4–6, the bomb deviates by 2 hexes. The bombs will deliver their normal damage to all Elements within the hex they scatter to.



ALTITUDE-BOMBING SCATTER DIAGRAM



DIVE-BOMBING SCATTER DIAGRAM

• ALTITUDE AND DIVE-BOMBING DIAGRAMS •

Determine and Apply Damage: When determining and applying damage from an Air-to-Ground Attack, DropShip Units deliver their damage based on the target's facing relative to the DropShip's hex position (treated as if the DropShip were grounded). All other aerospace Elements determine direction of attack based upon the hexside crossed when the Element entered the target's hex during the Movement Phase. If this hexside corresponds to the target's rear/aft the attack will do extra damage (if applicable).

Note that Bombing attacks never strike a Unit from the rear.

Damage (Bombing): In *BattleForce: Standard Rules*, the only bomb types available are standard High-Explosive, Cluster, and Inferno. Depending on the number and type of bombs dropped, the target will suffer a variable amount of damage as follows:

Each High-Explosive or Cluster bomb delivers 2 points of damage to all Elements of all Units in the target hex.

Inferno bombs increase the heat level for every 'Mech Element (or landed aerospace fighter Element) in the target hex by 2 points. (Additional Inferno bombs do not add to this effect). Against vehicle Elements, a hit by Inferno bombs delivers no damage, but the attacker rolls for a Critical Hit. Against ProtoMechs and Battle Armor each inferno bomb does 2 points of damage. Any non-battle armor infantry Elements struck by Inferno bombs are destroyed. Inferno bombs have no effect on DropShips.

Damage (Spheroid DropShip Attacks): The damage from a DropShip Air-To-Ground attack is equal to the DropShip's Damage Value for the aft weapon arc used at the appropriate range.

Damage (Strafing Attacks): A successful Strafing attack delivers half of the attacking Element's short range Damage Value (rounded normally, to a minimum of 1) to every Element in the hex struck by the attack. If overheating modifies a Strafing attack, add the Overheat Value to the short range Damage Value *before* reducing the damage by half. A Strafing attack that hits an Element from the rear delivers 1 additional point of damage, which is also added to the base Damage Value before halving takes place.

Damage (Striking Attacks): A successful Striking attack delivers the attacking Element's short range Damage Value (which may be adjusted by overheating) to the target Element, plus 1 additional point if the attack hits the target from the rear.

Attacks in Space

Space attacks can be performed by or against Units operating in space. The following modifications apply to the basic combat rules to resolve such attacks:

Attack Declaration: If a scenario calls for combat both in space and in atmosphere, Space attacks may only occur in turns that include a Space Movement Phase—that is, every six turns. Otherwise, Space attacks use standard declaration rules (see *Attack Declaration*, p. 225).

DropShips: Spheroid DropShips may declare multiple attacks, with one attack in each of their four main firing arcs (Front, Left, Right, and Aft, as shown in the Spheroid DropShip Firing Arc diagram, below.), plus additional attacks with any capital (or sub-capital) weapons. Aerodyne DropShips maintain the same four firing arcs they have in atmosphere or when grounded, with four arcs (Nose, Left Wing, Right Wing, Aft), plus additional attacks with any capital weapons.

Verify Line of Sight: In space combat, all Elements always have line of sight to all other Elements in space.

Determine To-Hit Number: The base to-hit number is the attacking Element's skill level, modified by the angle of attack modifier (see the Aerospace Angle of Attack Modifiers Diagram, below) and any other appropriate modifiers from the To-Hit Modifiers Table, p. 227).

OVERHEATING

Many 'Mechs and Aerospace Fighters have an Overheat Value shown on the record sheet. This number reflects the fact that these Elements have more weapons than they can fire safely. A warrior piloting such a machine can push his Element beyond its safety limits and inflict extra damage. However, the heat build-up caused by such high-power activity slows the Element down and causes its shots to become erratic until it has a chance to cool off.



• AEROSPACE ANGLE OF ATTACK MODIFIERS DIAGRAM •



• SPHEROID DROPSHIP FIRING ARCS DIAGRAM •

Only 'Mechs and Aerospace Fighters have an Overheat Value, and so the following rules for overheating apply only to those Elements.

Using Overheat Value

An attacking player must announce the amount his or her Element will overheat at the time of that Element's attack declaration. The Overheat Value is the amount of extra damage that can be added to the weapons attack when it overheats. The controlling player can decide exactly how much to overheat, from a minimum of 1 to a maximum of 4. This amount is added to the Damage Value for that Element at all range brackets for which it has a damage value. Elements with multiple weapon attacks may divide their overheat value between attacks or apply the entire value to one attack, but must decide before the to-hit roll is made.

If the overheating Element is in a water hex, its heat level goes up by 1 less than the amount of Overheat Value used. Physical and indirect fire attacks may not be augmented by overheating. Regardless of overheat value, 'Mechs and aerospace fighters may voluntarily raise their heat level by 1 point each turn as if they'd overheated, though they gain no additional damage and suffer all penalties of overheating.

Maximum Overheat

An Element cannot overheat more than the heat scale will allow (see *Heat*, at right).

A Ryoken B *has the following stats in* BattleForce.

RYOKEN B	
MP	6
Damage (S/M/L)	5/5/—
Overheat	3
Weight Class	2
Armor/Structure	6/3
Point Value	23
Specials	OMNI

It has an overheat value of 3, and so can overheat by up to 3 points. This means it can inflict up to 8 points of damage at Short or Medium range, but still no damage at long range because it has no damage value for that range bracket.

If it overheats once at this maximum value, its heat level rises to 3. In the next turn, it can only overheat by 1 additional level, because only one space is left on the heat scale (shutdown). It cannot overheat by 2 or 3 until it cools down.

END PHASE

The following section describes the rules for the End Phase.

DAMAGE

Unless overridden by a special ability, all damage inflicted during the Combat Phase takes effect during the End Phase. Any Critical Hits inflicted against an Element take effect, and all destroyed Elements are removed from play at this time.

HEAT

The boxed numbers and the letter "S" to the right of the Overheat Value represent the Element's heat scale. When an Element overheats, the amount by which it overheats is added to the Element's heat level, which is then marked on the heat scale.

An Element's current heat level is subtracted from that Element's MP and added to its attack target numbers. Mark on the heat scale in pencil, as the Element's heat will rise and fall during game play. The heat level does not actually change until the End Phase of the turn in which the attack is resolved. The attack modifier for overheating in one turn will not apply until the following turn.

Heat (HT#) Special Ability: The Heat special ability (see p. 349) reflects Units capable of inflicting heat instead of damage, as an outside heat source. In a single turn, no Element may receive more than 2 points of heat from attacks made using this special ability. If an Element capable of building heat has already generated 2 points of heat per turn from attacks, the heat effect is ignored for the current turn. The Element does not receive damage; instead, the extra heat effect is simply lost.

SHUTDOWN

The maximum heat level of 4 appears on the heat scale as an S, which represents shutdown. An Element reaching this level on the heat scale is shut down, and cannot attack or expend MP or Thrust Points. Any special electronics (such as Active Probes) on a shutdown Element do not function.

Attacks against a shutdown Element apply a –4 to-hit modifier and ignore the bonus for jump capability (if applicable). Shutdown Elements do not receive a target movement modifier.

Ground Units containing a shutdown Element cannot move; however, the other Elements' MP ratings are unaffected, and so they are no easier to hit in combat.

Aerospace Units containing a shutdown Element must fly in a straight line for a number of hexes dictated by the shutdown Element's velocity, remembering to reduce velocity by half if operating in the atmosphere. If the shutdown Element's velocity is reduced to zero, and it is in the atmosphere, it loses one altitude level. If this brings the Element into contact with the ground, it automatically crashes in its current hex (see Crashes, p. 223).

COOLING DOWN

Each time an Element overheats, its heat level increases. If the Element makes an attack but chooses not to overheat, the heat level remains the same; it decreases only if the Element makes no weapon's attack in a turn. In that case, the Element's heat level drops to 0 at the end of the End Phase.

This rule does not apply to shutdown Elements. In the End Phase, the heat level of any Elements that began the turn shutdown falls to 0. They start up again and can move and attack normally.

Caleb's Mad Cat *Prime uses its full Overheat Value of 2. Its heat level rises to 2 in the End Phase of the current turn. Caleb marks the 2 box on the heat scale. Caleb's* Mad Cat *will remain at a heat level of 2 until it forgoes a weapon attack. As long as the Mad Cat remains at this heat level, it will have 2 fewer MP to expend, and add a to-hit modifier of +2 to all its shots.*

If Caleb uses the Mad Cat*'s full Overheat Value in the following turn, it will automatically shut down in the End Phase of that turn.*

PREPARING FOR PLAY

ASSEMBLING FORCES

Preparing for a *BattleForce* game takes a little more work than preparing for a game of *BattleTech*. Though Elements fire weapons and take damage individually in *BattleForce*, they must be organized into Units and assembled into Formations and Forces. Players may find this process easier if they are familiar with the standard military organizations as described on pages 34-35 of *Total Warfare*.

There are five steps to assembling a Force:

1. Establish Point Value and Force Size
2. Determine military organization
3. Determine Unit weight/size class
4. Collect Elements into Units
5. Prepare record sheets

Establish Point Value and Force Size

Each Element in *BattleForce* has a Point Value that indicates its relative strength in the game. Higher Point Values generally indicate more powerful Elements. Prior to beginning play, players should agree upon the number of points and the size of the Formations each Force will field in battle.

Between 100 and 300 points will enable players to field company-sized Forces of regular experience. This is the recommended Force size for an introductory game. An average game, played with Battalion-equivalent Forces, consists of roughly 10 Units per Force and 350–1,000 points.

For a balanced game, the final value for each Force should be within 5 percent of the opposing Force and the Formations should be of similar size.

Determining an Element's Point Value

An Element's base Point Value is calculated by dividing its *TechManual* Battle Value by 100 and rounding the result normally to a minimum of 1 point. Use the base BV of each Element and do not modify for special ammo or *TechManual* variable Piloting and Gunnery skills. If the Element is a member of a functional C^3 or C^3i network, include the additional BV for the network in the Element's BV before dividing by 100 and rounding. To determine an Element's final Point Value, multiply the Element's base Point Value by its *BattleForce* Point Value Modifier, and round normally to a minimum of 1 point. The Point Value Skill Rating Table (top right) lists the modifier for each Skill Rating.

A complete list of Elements with *BattleForce* stats—including Point Values—may be found at www.classicbattletech.com.

- Base Point Value = (Battle Value +C^3 or C^3i Battle Value; if applicable) ÷ 100; round normally (minimum of 1)
- Final Point Value = Base Point Value x Point Value Modifier; round normally (minimum of 1)

DETERMINE MILITARY ORGANIZATION

Players may choose from three primary organizations: Inner Sphere/Periphery (which includes all Inner Sphere House, Mercenary and Periphery factions except ComStar and Word of Blake), Clan (which includes all Clan factions) or ComStar/Word of Blake.

The Force Distribution Table (see p. 239) shows the composition of each type of Formation, beginning with the smallest Unit for each faction and progressing to the largest Formation. Each line of the table lists the equivalent Forces by faction. The numbers in parentheses indicate the total number of Elements at that size of Formation. For Inner Sphere/Periphery Infantry and battle armor Formations, the number to the left of the slash is the number of conventional infantry Elements and the number to the right is the number of battle armor Elements. The Clans use the same Formations for conventional infantry, battle armor and ProtoMechs. ComStar/WoB use the same Formations for conventional infantry and battle armor.

Many variations of these basic Formations are possible. For the Standard Rules, only the most common version of each Formation for each faction is presented. This simplified table is provided as a convenience for building Forces. It is not meant to construe that a given faction fields the size and/or type of Forces listed.

POINT VALUE SKILL RATING TABLE

Skill Description	Element Skill Rating	Point Value Modifier
Wet Behind the Ears	7	0.68
Really Green	6	0.77
Green	5	0.86
Regular	4	1.00
Veteran	3	1.38
Elite	2	1.82
Heroic	1	2.24
Legendary	0	2.63

ProtoMechs

ProtoMechs are a special Element only available to Clan Forces. In *Total Warfare* game play, ProtoMechs are deployed in groups of five, known as a Point. Similar to battle armor and infantry platoons, a ProtoMech Point is treated as one Element in *BattleForce*.

Support, Transport and Combat Elements

In the Standard Rules, Elements begin play on the battlefield, not aboard transports. However, as many transports are at least marginally armed, they may be included as part of any company-equivalent or larger Force. These Elements do not count toward the total number of Elements for the Formation, but do cost points.

Small and Medium Support Elements combine to form Units according to their faction's prevailing organization—that is, 4 Elements per Inner Sphere/Periphery Unit, 5 Elements per Clan Unit and 6 Elements per ComStar/WoB Unit. If insufficient Support Elements are available, players may create an understrength Unit that includes fewer Elements.

Small and Medium Transport Elements also combine to form Units according to their faction's prevailing organization. Again, players may create understrength Units as necessary.

Large Support Elements, Large Transport Elements, DropShips and Small Craft never combine to form Units under the *BattleForce: Standard Rules*. They always operate as single-Element Units.

It is beyond the scope of these rules to categorize every Element in *BattleTech* as support, transport or combat. As a rule of thumb, any Element with less than military-grade Armor (Commercial armor and other armor types with a BAR below 10) that does not have cargo space can be considered a Support Element. Any Element that has cargo space but does not have Military Armor

(any non-Commercial Armor and BAR 10 Armor) is considered a transport Element. Any Element that mounts Military Armor (standard, ferro-fibrous and so on), regardless of any other features, is automatically considered a combat Element, except for DropShips and Small Craft (which are always considered Transport Elements, unless they devote less than 25% of their total mass to cargo and/or transporting other Elements, in which case they are considered Combat Elements).

In the event players cannot agree on the appropriate classification for a particular Element, roll 2D6. The higher total decides the classification of the Element in question.

Alice, Aaron, and Tim are each going to assemble 200-point Forces for their respective factions.

Alice fancies mercenaries and elects to build an Inner Sphere Company.

Aaron admires the Ghost Bears' tenacity and decides on a Clan Trinary.

Tim wants to play the bad guy and go after non-military targets. He's going to build a Word of Blake Unit.

Consulting the Force Distribution Table, Alice sees that her Company will consist of 3 lances of 4 Elements each. Aaron finds that his faction is organized in Stars of 5 Elements each, and his Trinary will require 3 Stars. Tim doesn't see an equivalent Formation for the WoB, but sees that he may field 2 Level IIs, each with 6 Elements, as an equivalent.

FORCE DISTRIBUTION TABLE

'MECHS		
Inner Sphere/Periphery Forces	**Clan Forces**	**ComStar/WoB Forces**
Lance (4 Elements)	Star (5 Elements)	Level II (6 Elements)
Company (12 Elements)	Trinary (15 Elements)	N/A† (2 Level IIs)
Battalion (36-40 Elements)*	Cluster (30-75 Elements)	Level III (36 Elements)
Regiment (108-132 Elements)**	Galaxy (170-275 Elements)	Level IV (216 Elements)

COMBAT VEHICLES		
Inner Sphere/Periphery Forces	**Clan Forces**	**ComStar/WoB Forces**
Lance (4 Elements)	Star (10 Elements)	Level II (6 Elements)
Company (12 Elements)	Trinary (30 Elements)	N/A† (12 Elements)
Battalion (36-40 Elements)*	Cluster (60-150 Elements)	Level III (36 Elements)
Regiment (108-132 Elements)**	N/A	Level IV (216 Elements)

INFANTRY, BATTLE ARMOR AND PROTOMECHS		
Inner Sphere/Periphery Forces	**Clan Forces**	**ComStar/WoB Forces**
Platoon/Squad (1 Element)	Star (5 Elements)	Level II (6 Elements)
Company (3/4 Elements)‡	Trinary (15 Elements)	N/A† (12 Elements)
Battalion (9/12 Elements)‡	Cluster (10-75 Elements)	Level III (36 Elements)
Regiment (27/36 Elements)‡	N/A	Level IV (216 Elements)

AEROSPACE AND CONVENTIONAL FORCES		
Inner Sphere/Periphery Forces	**Clan Forces**	**ComStar/WoB Forces**
Air Lance (2 Elements)	Point (2 Elements)	N/A† (2 Elements)
Squadron (6-9 Elements)	Star (10 Elements)	Level II (6 Elements)
Wing (18-36 Elements)	Trinary (30 Elements)	Level III (36 Elements)

SUPPORT AND TRANSPORT UNITS PER COMPANY-EQUIVALENT FORCE		
Inner Sphere/Periphery Forces	**Clan Forces**	**ComStar/WoB Forces**
4 Support Elements	2 Support Elements	4 Support Elements
2 Transport Elements	2 Transport Elements	2 Transport Elements

*The Typical Inner Sphere 'Mech and some Vehicle Battalions Include 1 additional Command lance for a total of 40 Elements

**The Typical Inner Sphere 'Mech and some Vehicle Regiments Include 1 additional Command company for a total of 132 Elements

†ComStar/WoB do not have a name for this formation, but it is technically two Level Is

‡Number left of slash = Conventional Infantry Elements; Number right of slash = Battle Armor Elements

COLLECTING ELEMENTS INTO UNITS & FORMATIONS

Once the military organization and Point Value have been determined, it's time to build Units and assemble them into Formations.

Unit Limitations and Combined Arms

BattleTech fiction usually portrays combined-arms Forces. While this works well in *BattleTech*, it's a little more complicated in *BattleForce*. Combined-arms Units are possible in *BattleForce*, but it is easier to combine different Element types at the Formation level. A Unit, regardless of its number of Elements, operates with the most restrictive movement limitations of each of its disparate Elements. For example, an Element that has 5 MP of ground movement and 3 MP of jumping movement is considered to have 5 MP when the Unit moves on the ground, but 3 MP when the Unit jumps.

A Unit's MP always equals the lowest MP of any of its dismounted surviving Elements. The Unit is considered jump-capable (j) only if all surviving Elements in the Unit have Jumping MP. Players must recalculate a Unit's MP during play when heat or critical damage slow down an Element, or when

an Element is destroyed. Additionally, if any terrain restrictions apply to any Element in a Unit, then the terrain restrictions apply to the entire Unit so long as that Element remains intact.

Aerospace Elements may not be combined with non-aerospace Elements to form Units. Aerospace Fighters may combine with Fixed-Wing Support Vehicles and Conventional Fighters, but not Airships. Combining aerospace Elements with craft that do not have the Spaceflight (SPC) special ability (see p. 353) will limit the Unit to atmospheric operations. Also, as with ground Units, an aerospace Unit operates with the limitations of the most restricted Element, including available thrust and movement modes. VTOLs and WiGEs should always be organized in Units consisting only of VTOLs or WiGEs for maximum playability.

While many factions in *BattleTech* use combined-arms Forces, it is advisable to build homogenous Units. Though players can create a Unit comprised of 2 BattleMechs, 1 Tracked Vehicle and 1 Foot Infantry Platoon, the Unit would be subject to the following limitations:

- It would have MP equal to the slowest Unit, in this case the 1 MP Foot Infantry Platoon.
- It would not be able to enter water hexes (prohibited terrain for Tracked Vehicles and Infantry).
- It would pay 2 MP per level change (a limitation of Tracked Vehicles).

Building Units

The Force Distribution Table (see p. 239) shows the number of Elements per Unit. Players build Units (Lance/Star/Level II) by grouping together the correct number of Elements and recording the information on the appropriate record sheet. If insufficient Elements are available, players may create an understrength Unit that includes fewer Elements. In the Standard Rules, full-strength Units must be created whenever possible. Larger Formations should be created by building individual Units and assembling them into Formations until the desired number of Elements has been reached.

Subtract the points for each chosen Element from the available points for your Force. A Force does not have to spend all of its available points, but any unspent points are lost.

Alice starts off her first lance with a Panther *PNT-10K (8 points), adds a* Nightsky *NGS-4S (12 points) and a* Raven *RVN-3L (7 points), and rounds out the lance with a* Snake *SNK-1V (10 points), for a total of 37 points.*

For her second lance, Alice selects a Black Hawk-KU *BHKU-OC (16 points), a* Caesar *CES-3R (16 points), a* Falconer *FLC-8R (22 points) and a* Gallowglas *GAL-2GLS (19 points). She's spent 73 points on this lance and 110 points so far.*

Finally, Alice chooses a Scorpion *SCP-12S (11 points), a* Shadow Hawk *SHD-5D (17 points), a* Starslayer *STY-3D (16 points) and a* Stealth *STH-1D (12 points). That takes 56 more points, bringing her to a grand total of 166 points. Seeing that she has points remaining, Alice decides to increase the Skill Rating for some of her Elements. She decides to give the* Nightsky *a 2 Skill Rating and the* Gallowglas *and* Stealth *Skill Ratings of 3 each. This raises the Point Value of each Element: The new Point Value for the* Nightsky *is (12 x 1.82) 21.84 which rounds to 22; for the* Gallowglas *(19 x 1.38) 26.22 which rounds to 26; and for the* Stealth *(12 x 1.38) 16.56, which rounds to 17. Comparing the new Point Values to the original ones, Alice finds she's spent an additional 22 points for a grand total of 188 points.*

Aaron elects not to be constrained by the faction list and starts off his Ghost Bear Unit with a bevy of ProtoMechs. He picks 2 points of Delphyne*–2 ProtoMechs at 16 points each for a total of 32 points so far. He adds 3 Elements of Clan Elemental battle armor at a cost of 4 points each, bringing the total of his first Star to 44 points. He realizes that combining battle armor and ProtoMechs in the same Unit will limit their movement to that of the slowest Element. The Clan battle armor has 3 Jumping MP and the* Delphyne *ProtoMechs have 5 Jumping MP. Aaron's first Star will have a Jumping MP of 3, which he finds acceptable.*

For his next Star, Aaron picks an Arctic Wolf 2 *(15 points), a* Stooping Hawk B *(21 points), an* Ursus *(18 points), a Fenris C (12 points), and* Black Hawk H *(19 points). The total for his second Star is a whopping 85 points, leaving him with 71 points for his final Star.*

Rounding out his Trinary, Aaron takes a Jenner IIC *(10 points), two* Koshi As *(6 points each), a* Dasher H *(7 points) and a* Peregrine *(14 points). His total for his last Star is 43 points, bringing his Force to 172 points. Aaron elects not to improve Skill Ratings for any of his Elements.*

Tim begins with a King Crab *KGC-001 (22 points), adds a* Marauder *MAD-5M (15 points), a* Thunderbolt *TDR-9M (16 points), a* Toyama *TYM-1A (17 points) and a* Tempest *TMP-3M (18 points), and completes his first Level II with a* Cerberus *MR-5M (20 points). He's spent 108 points so far.*

For his second Level II, Tim elects to go with vehicles. He starts with a Demolisher (Gauss Variant, 15 points), then adds a Schrek PPC Carrier (10 points), a Von Luckner Heavy Tank VNL-K75N (14 points), a pair of Ontos Heavy Tanks (3058 version, 11 points each) and finally an SRM Carrier (3058 version, 8 points). The tally for his second Level II is 69 points, bringing his total to 177 points.

Looking at the Force Distribution Table, Tim sees that he can add up to 2 Transport Elements that will not count toward the total number of Elements in his Force. He decides to include a pair of King Karnov transports at a cost of 1 point each, bringing his Force to a total of 179 points. As each King Karnov is a Large Transport Element, they will operate as single-Element Units. Tim also decides not to improve Skill Ratings for any of his Elements.



A Word of Blake Level II decimates buildings hunting for insurgents.

DETERMINING UNIT WEIGHT/SIZE CLASS

Each Element in *BattleForce* has a weight class derived from its *Total Warfare* weight class, or a size class derived from its relative size. To determine a Unit's weight/size class, total the appropriate weight/size values for all Elements in the Unit. Then divide the total by the number of Elements in the Unit and round normally. The Weight/Size Class Table provides the weight/size class, corresponding weight in tons and weight value for all Elements.

A Unit's weight class is determined at the start of play, and is not adjusted for destroyed Elements. This means a Unit will have the same weight class for the entire game.

Remember that Large Support and Large Transport Elements never combine to form Units under the *BattleForce: Standard Rules*.

Refer to the Weight/Size Class Table (see *BattleForce: Conversion Rules*, p. 356) to determine an Element's Weight/Size Class.

Miniatures

Once a Unit's weight/size class has been determined, an appropriate miniature should be selected to represent the Unit: a heavy 'Mech miniature for a heavy 'Mech Unit, and so on.

Looking at the 'Mechs in her first lance, Alice sees that the Panther *weighs 35 tons, which puts it in the light weight class with a weight value of 1. The* Nightsky *weighs 50 tons, making it a medium with a weight value of 2. The* Raven *weighs 35 tons, another light. Finally, the* Snake *weighs 45 tons. Alice adds the weight values for all four Elements (1 + 2 + 1 + 2), giving her a total of 6. She divides this by the number of Elements in the Unit (4) and gets 1.5, which she rounds up to 2. Her first lance is a medium lance. Alice repeats the same process for her second and third lances, finding them to be heavy and medium, respectively.*

Aaron's first Star includes 2 ProtoMech Elements and 3 battle armor Elements. Consulting the Weight Class Table, he finds that they are all considered light Elements. He adds the weight value for each Element (1 + 1 + 1 + 1 + 1), yielding a sum of 5. He divides this by the total number of Elements in the Unit (5) for a value of 1: a light Star. Repeating this process for his second Star, he notes that it is a medium Star. His third Star is light.

The WoB Forces under Tim's control start with a King Crab. *At 100 tons, it's in the assault weight class. The* Marauder, Thunderbolt, Toyama *and* Tempest *are all heavies. Finally, the* Cerberus *is also an assault 'Mech. Tim adds the weight values for these Elements (4 + 3 + 3 + 3 + 3 + 4), giving him a total of 20. He divides this by 6 (the number of Elements in his Level II) for a result of 3.33, which he rounds down to 3. His first Level II is a heavy Unit. Adding up the weight values for his second Level II and dividing by 6 indicates that Unit is an assault Unit. Finally, Tim consults the Weight Class Table and determines that his 200-ton King Karnovs are both in the Large Transport Vehicle class.*

Preparing Record Sheets

There are five types of record sheets in *BattleForce*. The Record Sheet Table lists which record sheet should be used for each type of Unit.

After choosing the appropriate record sheet for each Unit, consult the list of *BattleForce* stats at www.classicbattletech.com or follow the conversion rules starting on page 342 to get *BattleForce* stats for each Element.

Enter each statistic on the appropriate field on the record sheet, remembering to darken any extra armor and structure circles so that the correct number of circles remains.

Once the individual stat blocks have been filled out for each Element, record the Unit's Point Value and name. When deploying combined-arms Units, the prevailing Element type should be used. In the event all types of Elements are represented equally, the heaviest Element type should be used. If that still results in a tie, then either of the tied Element types may be used.

RECORD SHEET TABLE

Unit	Record Sheet
Inner Sphere Air Lance	Aerospace Record Sheet
Inner Sphere Lance	Inner Sphere Record Sheet
Clan Aerospace Star	Aerospace Record Sheet
Clan Star	Clan Record Sheet
ComStar/WoB Level II	ComStar/WoB Record Sheet
DropShip/Small Craft	DropShip Record Sheet (Aerodyne or Spheroid as appropriate)
Support Vehicle	Inner Sphere/Clan/ComStar or WoB Record Sheet as appropriate

Looking at the list of BattleForce *stats downloaded from www.classicbattletech.com, Alice records the following stats for her* Panther*: MP 4j, S 2, M 2, L 1. She next colors in all but 3 armor circles and all but 3 internal structure circles. For Weight, she enters L, denoting that the* Panther *is in the light weight/size class. She enters 4 for skill. As the* Panther *has no special equipment, she leaves the special ability line blank. Next she records the stats for her* Nightsky, Raven *and* Snake.

Alice notes that her Unit will have 4 movement points, matching the speed of the Panther, *which is her slowest Element. Should the Panther be eliminated, her Unit would have 5 MP, as the* Snake *would be the slowest remaining Element. She also notes that the Unit cannot jump as long as the* Raven *is part of it; should the* Raven *be eliminated, the Unit would have 4 Jumping MP available. She finishes the record sheet by naming the Unit Ace's Lance and recording its Point Value.*

Alice finishes filling out record sheets for the rest of her Force, as do Aaron and Tim. They are almost ready to begin play.

SETTING UP

Both players roll 2D6. For the duration of setup, the player with the higher result is the Initiative Winner, and the player with the lower result is the Initiative Loser. The Initiative Winner chooses a scenario type (see *Creating Scenarios*, p. 258, *TW*). Then the Initiative Loser selects the mapsheets (see *Creating Scenarios,* p. 262, *TW*) or prepares terrain.

The Initiative Winner chooses his home map edge—the edge of the map where his Units will enter. The opposite edge becomes the Initiative Loser's home map edge. Generally, a player's Units can safely exit the map only through that player's home edge (aerospace Units are an exception; see *Aerospace Space Movement Phase,* p. 224). Some scenarios may require a player's Units to exit from the opponent's home edge, while others may allow Units to exit from any edge.

If more than two sides exist in the game, each side should pick a map edge for their deployment zone. If more than four sides exist in a game, map sides must be divided to form a sufficient number of deployment zones.

Next, players place objective counters in their opponent's Deployment Zone. The Deployment Zone is the first five hexes of the map, starting at the home map edge. Players will have two objective counters, one that they place and one that their opponent places. Beginning with the Initiative Loser, each player places one of his objective counters. Then, beginning with the Initiative Winner, each player places one of his opponent's objective counters. If a scenario calls for more than two objectives, repeat these steps until all objective counters have been placed. All objective counters must be placed at least 5 hexes apart unless the size of the battlefield makes this impossible.

Finally, beginning with the Initiative Loser, players place their Headquarters counter anywhere in their Deployment Zone.

GAMES WITH SPACE AND GROUND MAPS

If both space and ground maps will be used, one edge of the space map must be designated as the Space/Ground interface. The interface should be perpendicular to the home map edges.

Headquarters and objectives may be placed on the space map, but only if both Forces field aerospace Units capable of spaceflight (SPC).

STARTING POSITIONS

Generally, Units begin play off the board and enter the battlefield on the first turn. However, should players agree, Units may begin play deployed on the battlefield. In this case, both players roll 2D6. The player with the higher result may choose whether to set up first or second. The player who sets up first places one his Units on the map—in his Deployment Zone—and then the player who sets up second places one of his Units on the map. Continue alternating placement until all Units have been placed. If necessary, refer to the unequal number of Units rule (see p. 39, *TW*). Units may start play with any facing (and at any velocity) desired, but may not occupy half-hexes.

CREATING SCENARIOS

Guidelines for creating scenarios may be found in *Total Warfare* beginning on page 257. This section discusses adapting those scenarios for *BattleForce*. As with *Total Warfare*, the information in this section should be considered guidelines rather than hard and fast rules for creating scenarios.

STANDUP FIGHT

This scenario converts effortlessly to *BattleForce*. Headquarters and objectives for each player are optional, but strongly encouraged. For more variety, consider doubling or tripling the number of objectives. In a scenario using space and ground maps, objectives should be placed on both maps.

HIDE AND SEEK

When setting up for this scenario, the player placing her Forces using Hidden Unit rules (see p. 259, *TW*) should also place all of her opponent's objective counters using these rules. Objective counters placed in this fashion may be hidden as if they were 'Mechs.. Her opponent should place all of the hiding player's objective counters. For a more challenging game, the hiding player should receive additional points to build her Force in lieu of fielding a Headquarters.

HOLD THE LINE

This scenario should not be played with a space and ground map, though it plays quite well on either. Headquarters should be included, but players may consider foregoing objectives.

EXTRACTION

If any scenario begs for objectives, this is it. Instead of awarding points when a player captures an objective, have the objective move with that Unit. Players can only claim points for objectives by returning to their Deployment Zone with them. If the Unit transporting the objective is destroyed, the objective remains on the field in that hex, and must be captured again to begin moving. Numerous variations are possible, such as allowing players to occupy and move their opponent's objectives. Extraction scenarios adapt wonderfully to capture-the-flag type games.

BREAKTHROUGH

Breakthrough scenarios don't lend themselves well to objectives. Headquarters are optional. For this scenario, each player attempts to exit the map through their opponent's deployment zone.

CHASE

This scenario works well if the objectives represent grounded DropShips waiting to whisk away the trapped Units. The fleeing Force should start about ten hexes away from their opponent's Deployment Zone. Unlike most games, the fleeing Force's objectives should be placed in their Deployment Zone. For variations on this theme alter the number of objectives for the fleeing Force.

VICTORY CONDITIONS

In most scenarios, there are four ways to win a game:

1. Destroy all of the opposing player's Forces
2. Capture all of the opposing player's objectives and Headquarters
3. Score more victory points than your opponent
4. Complete other victory conditions as defined in the scenario

Under normal circumstances, the team with the last surviving Element(s) left on the map wins. If the last Elements from each team are destroyed simultaneously, or if the last Elements from each team cannot move and have no ability to damage one another, the game is a draw.

Capturing objectives and Headquarters may not be applicable in certain types of scenarios. It's best to include objectives and Headquarters, as they provide a more dynamic game, but players may exclude either or both. Guidelines for their use are provided below.

The players may set other victory conditions by mutual agreement before play begins or by using the victory conditions given in a Catalyst (or FanPro or FASA) published scenario.

Victory Points

As each Element in *BattleForce* is assigned a Point Value, these points can be used as a method to determine the victor and quality of victory. It is beyond the scope of these rules to present every permutation of victory points. Instead, these rules provide a framework for incorporating victory points into a scenario.

Generally, each side begins with no victory points, and accrues (or loses) them as shown on the Victory Points Table (below). The player with the most points at the end of the game wins. If the difference between the two players' scores is greater than the number of points used to purchase Forces for the winning side, the victory is Decisive. Otherwise, the victory is Marginal. If both players' scores are tied, the game is considered a Draw.

Objectives

Battles are always fought for something. As discussed in *Setting Up* (see p. 242), players usually have two objectives in their opponent's Deployment Zone and two objectives in their own Deployment Zone. The objectives represent some tangible asset to be captured, destroyed or defended: important VIPs, fuel or ammunition, a building, a disabled Unit and so on. The exact nature of the objective is limited only by the players' imaginations. Objectives do not move or attack, and do not count against stacking limits in a hex (see *Movement Basics*, p. 216).

To occupy an objective, an opposing Element must move into the hex containing the objective. If the opposing Element is the only Element in the hex for two consecutive End Phases, the objective is captured and removed from the field during the second End Phase.

The victory Point Value for offensive objectives is based on the Point Value of the defending Force. To determine the value of each objective, multiply the Point Value of the defending Force by 0.66 and divide the resulting number by the total number of objectives (usually 2), then round normally.

Headquarters

Each player's Headquarters is also a special objective for the opposing player. Headquarters are not subject to the placement restrictions for regular objectives, that is, they may be placed anywhere in the deployment zone.

The victory Point Value for Headquarters is based on the Point Value of the opposing Force. To determine the value of Headquarters, multiply the Point Value of the opposing Force by 0.33, then round normally.

Brian and Tom want to calculate the victory Point Values for their objectives and Headquarters. Brian used 492 points for his Force, and Tom used 487 for his.

As Brian will be trying to occupy or capture the objectives and Headquarters that Tom is defending, the value of those items is based on Tom's Force. Brian multiplies the value of Tom's Force (487) by 0.66, giving him a result of 321.42. He divides this result by the number of objectives (2) and rounds normally for a final value of 161. Each offensive objective will be worth 161 points to Brian if he captures it and 40 points if he occupies it.

To determine the value of Tom's Headquarters, Brian multiplies the value of Tom's Force (487) by 0.33, giving him 160.71, which he rounds to 161. If Brian can capture Tom's Headquarters, he will gain 161 victory points. If he occupies it, he'll earn 81 victory points.

Tom follows the same process to determine the value of the objectives he is attempting to capture or occupy. He multiplies the value of Brian's Force (492) by 0.66. This produces a result of 324.72. Tom then divides this by the number of objectives (2) for a value of 162.36, which he rounds to 162. This makes each objective worth 162 points if Tom captures it and 40.59 points (rounded up to 41) if he occupies it. For Brian's Headquarters, Tom multiplies the value of Brian's Force (492) by 0.33 for a result of 162.36 (which he rounds to 162). Capturing the Headquarters will give Tom 162 points, while occupying it nets him 41 points.

VICTORY POINTS TABLE

Event	Points Awarded
Enemy Element Destroyed	Double Element's Point Value
Friendly Element Destroyed	Subtract the Element's Point Value
Objective Occupied*	Objective Point Value x 0.25 (round normally)
Objective Captured**	Objective Point Value
Headquarters Occupied*	HQ Point Value x 0.50 (round normally)
Headquarters Captured**	HQ Point Value
Other Event	Varies

*Points are not awarded for occupying the same objective or Headquarters multiple times.
**Points are not awarded for occupying an objective or Headquarters if it is captured.



AEROSPACE OPERATIONS

—Tharkad University lecture broadcast at the Lloyd Marik-Stanely Aerospace School. Used With Permission.

Yep, Dr. Readly is out again and wants me to run the lecture. Unfortunately, I'm out, too, but the wonders of video recording and splicing have allowed me to pilfer bits and pieces from past semesters.

It turns out that one lecture on the dull aspects of transportation technology wasn't enough. I think Dr. Readly's figured out that he can dump the boring lectures on me so he gets the glory. But did I forecast that research paper or what? You got two lectures of first-hand vids personally made by Dr. Readly of various WarShips, and then a paper on General Electric's Electrofreight train. I hope I got you going in the right direction with my last lecture on trains.

Today, you get a lecture about life *on* vehicles, spacecraft specifically, and some of their operational aspects. One thousand one hundred fourteen years ago today, Yuri Gagarin became the first human to enter orbit. After thirty years of fairly regular visits, humankind settled in for a permanent residency with the later Sal-…Salyut? Am I saying that right? Anyone from Tikonov here? Yes, the last Salyut space station, Mark 8, was continuously inhabited. And Salyut-8 was soon dwarfed by its Western contemporary, the massive Crippen Station. That means humankind will mark its eleventh full century off Terra in about seventeen years, and the way things are starting to look, some of us might actually be alive to see that date.

COMBAT

Speaking of the excitement brought to the Inner Sphere by the Word of Blake, one thing humankind has been doing while it lived in space is fighting. Let me snip in something from when I had pretensions to teach military history…

We went into space using missiles originally intended to launch nuclear warheads between Terran continents, and the bulk of space travel expenditures for the first half-century of space flight were on military-related hardware. The first recorded serious fight in space was unarmed, non-lethal, and occurred on Salyut-8 in 1994. Something about a spacer from the Soviet tributary state, the Afghan SSR, objecting to the politics of his fellow spacers. Blood sport enthusiasts had to wait almost two decades for space conflict to graduate from fists to knives and see the first murder in space, in 2010 on Crippen Station…there's a first you don't usually hear about Crippen.

Crippen then raised the bar for space combat a lot higher than utility knives by waging the first real space-to-space fleet engagement in 2014: it utilized primitive energy weapons mounted on itself and a flotilla of satellites to shoot down nuclear missiles launched in the Second Soviet Civil War. Crippen's weaponry might as well have been chipped from flint and bone compared to today's weapons, but we're here today because of that engagement.

Almost eleven centuries later, space stations, satellites and ballistic missiles are rare participants in space combat. Today, the dominant participants are DropShips and aerospace fighters, with high-profile cameos by the handful of WarShips. Unlike the variations offered by terrain and atmosphere on a planet, there are not a lot of different approaches for engaging opposing forces. Weaponry makes relatively little difference but for range and firepower-per-weapon, since advantages like indirect fire or problems like minimum ranges are rarely manifest in space. Electronic warfare, on the other hand, provides some advantages and can well turn a battle.

Once the shooting starts, engagements boil down to one of two forms in space: the fast pass and the slow exchange.

The slow exchange dominates media retellings of space combat because it's more exciting to spectators. It entails the two forces ending up on roughly the same heading and speed, like the same direction in orbit or the same direction on a jump point-to-planet transit. Since the two forces are basically moving together, the conflict can last many minutes and give all the dogfighting excitement the entertainment industry has taught us to expect from space combat.

Not a lot of fancy options exist for finessing a slow exchange. Unless one side has an edge in fuel and acceleration that allows it to flee, the fight will continue until someone wins one way or another. There are no handy canyons, forests or storms to mask clever maneuvering, though good use of ECM can ruin targeting solutions during advances and retreats. Units with particularly high acceleration compared to the foe might be able to apply their firepower to a vulnerable area and amplify their damage, but generally these conflicts are slugging matches that favor the side with the most firepower and armor.

The "fast pass" encompasses any space conflict where the two sides approach each other too rapidly to linger for multiple salvos. This is typical of situations where defenders intercept invaders hours or longer from a planet, or two forces approach each other in opposing orbits. Since it would take many minutes, hours, or sometimes days to halt and have a slow exchange-style slugging match, fast passes basically amount to single salvos traded in the precise moments when the foes are in range. Or will be in range—you have to allow for flight times of shots. There's not much to finesse these sorts of combats, either. When you're in range for milliseconds, a little error in timing can cause you to miss completely, so the fine tactics are mostly a matter of maneuvering your forces to guarantee some will end up in range of the other guys at just the right time—or trying to avoid that.

Admirals can talk about clever formations, fighter screens and escorts, but in the frictionless environment of space it's far too easy to arrange a fast pass through outlying defenders to reach transports for a fast pass of your own. Foes almost have to want to stop to draw out an engagement, or be decidedly slower than the other side. And before anyone corrects me, by "slower" I do mean "possessing lower acceleration." Even slow JumpShips can get moving very quickly, given time.

Here's a series of snippets on how to use various primary aerospace combat units.

Fighter Operations

Aerospace fighters are small, lightly armored and outgunned by virtually any other unit in space. Their strengths are their nimbleness, numbers and the aggregate firepower of massed squadrons.

Fighters can dominate space when deployed in sensible numbers—a good *Vengeance* deckload will turn just about any aerospace battle—but their problem is delivery. Aerospace fighters are not equipped with heat-expansion fusion rockets, but are limited to lower-temperature maneuvering drives that either indirectly heat hydrogen like BattleMech jump jets, or dilute reactor exhaust heavily with secondary hydrogen injections. Or a little of both. Either way, the heaviest fighters only manage an exhaust velocity of a bit over 2,000 kilometers per second, which clearly…maybe not so clearly…means that fighters inhale reaction mass. The average fighter will exhaust its five tons of reaction mass in about three hours at 1 G, while a 16,000-ton *Excalibur* will have only used about a quarter-ton of fuel in the same time when in heat-expansion mode. When you look at the days of transit time between standard jump points or in between planets, you can see the problems fighters have in getting anywhere on their own. Fighters are good for powered intercepts over—roughly—a volume occupied by an average planet and its moons, assuming they do some coasting and invest in drop tanks.

That short range dominates fighter tactics. They have to be carried to deep space battles by a carrier, usually either a DropShip or WarShip, and launching and capturing fighters takes time. They can only stray so far from ground bases on their own. If they depend on a carrier, take a good moment to think about an application of a fast-pass attack on the carrier, especially when those fighters cannot physically block fast-moving attackers the way a line of BattleMechs can obstruct foes from their base. You can indirectly kill whole wings of fighters by killing their carrier.

DropShip Operations

Assault DropShips, especially the new so-called "Pocket WarShips" (which are assault DropShips with fancier names and capital missiles), have some application in combat, but they're mostly an unhappy middle ground between fighters and WarShips. They have dramatically less firepower per ton than fighters and cost substantially more, while at the same time gaining new vulnerability to capital weapons—they're big enough to hit easily with capital guns. Really, assault DropShips are kind of like little WarShips but without the K-F drive, armor or firepower. But if you don't have WarShips, and you need interplanetary range with substantial firepower, then it's worth looking into these vehicles.

Most DropShip operations are thus dominated by DropShips acting as transports, which means they're usually busy trying to avoid being shot by fighters or the occasional WarShip. WarShips are exceptional DropShip hunters, since DropShips cannot muster the swarming durability, numbers or firepower of a large fighter unit, nor can DropShips easily avoid the big guns of WarShips. Fortunately for DropShips, WarShips are rare. Unfortunately for DropShips, fighters are not.

THE CRAZY JANE MANEUVER

Let's see your best aerospace fighters or Pocket WarShips try this:

First, you plunk down some observation satellites or small craft at some jump points. Maybe they're pirate points in a system where you want to stomp out smuggling or pirate raids, or maybe it's the standard points of a system where you'd like to run some anti-shipping operations. Next, when your remote spy sees a standard JumpShip named "SS Target Practice," it burps a well-focused laser signal to you, perhaps across some relays if you happen to be hiding behind a star or planet, which may take tens of minutes or hours to get to you. But really, the delay isn't a problem because if your victim just jumped in, chances are it won't be departing for about a week.

Now, here's the fun part: using your spy's sensor data and your own precise navigational system, you plot a jump to arrive right beside the victim. Maybe you were at a pirate point yourself, or maybe you were at the other standard jump point of the system, or maybe—if your spy had an HPG—you were in another system altogether. In any case, it's a trick a fighter or DropShip would never pull off on its own.

And here's the two parts that makes this crazy, even more so than the fairly neurotic in-system jump straight into combat. First, you're trying to jump as close as possible to the target JumpShip as you can without getting drive-on-drive interference, and military JumpShips and WarShips have a spherical error probability of five hundred meters when their navigators are at their best. A few kilometers of error isn't unknown, and can kill both vessels. Second, you're immediately going to fire up your motors and move closer to the victim, where a jump by either vessel will kill both ships.

The theory is that by the time the target's crew can think about jumping, your WarShip will only be hundreds of meters away and the target JumpShip will have to surrender, so you could capture the ship without firing a shot. The risk is that a panicked target crew might jump anyway and destroy both vessels.

This maneuver was created by Captain Jane Hargreaves of the Terran Hegemony *Aegis*-class heavy cruiser *Spark* in 2431 to harass civilian shipping within the bounds of the newly created Ares Conventions, which banned attacks on civilian targets. Captain Jane Hargreaves' potentially suicidal imposition of a K-F Drive—Crazy Jane Maneuver. Get it? Good, because it's something that only WarShips can pull off single-handedly.

As transports, DropShips are critical to modern interstellar warfare. And interstellar civilization, for that matter. Their combat operations reflect that. Only carrier DropShips *have* to risk themselves to bring fighters to battle. You'd think other DropShips would stay clear of battle—perhaps of the whole system—until defending fighters and WarShips were swept away, but often a shortage of aerospace forces and the long flights from jump points, which give defenders time to send reinforcements from other systems, means the transports have to move in with their escorts. Some transport DropShips can give a good accounting of themselves in a fight against moderate threats, like an *Overlord* or *Union*, but they're gambling their passengers' lives if they enter combat.

And, trust me, the quickest way to destroy a BattleMech regiment—without nukes—is to blow up their transports before the 'Mechs are dropped. It's not sporting, but it's very effective.

WarShip Operations

I actually planned to talk about this in our last lecture, but cut it for lack of time. I'll share it now, though…

So, what good are WarShips? How can you use them in combat? These might seem like dumb questions, but with WarShips dropping left and right, often in futile battles, you should give it some thought. The fact of the matter is most WarShips—and other large spacecraft—are vulnerable to a reasonable force of aerospace fighters. Aerospace fighters can be the kings of the aerospace battlefield. But they are kings with short legs that have trouble intercepting and chasing down WarShips or anything else with a heat-expansion fusion engine. That gap in the superiority of fighters is one place WarShips find use.

WarShips have high strategic mobility. Unparalleled even. Sure, fighters can run rings around most WarShips in a tactical situation, but only for minutes at a time. Within a star system, WarShips are matched by DropShips in maneuverability, but WarShips can do most things a DropShip can, and do them better. WarShips can chase down all sorts of military transports—including fighter carriers—and kill them more quickly than any assault DropShip. They're also more likely to survive the experience if heavy fighter screens are present.

WarShips' organic jump capability also sets them apart from DropShips, which often depend on conventional JumpShips for transport. WarShips can haul themselves to threatened areas, or raid areas, much more readily than a DropShip, and obviously beat the pants off fighters in this regard. They can even use their jump capabilities for daring—or stupid—in-system jumps, giving them unique defensive and offensive options. The "Crazy Jane Maneuver" perhaps exemplifies the offensive potential of a WarShip's jump drive in a tactical situation.

In short, WarShips can be excellent anti-shipping raiders. In comparison, fighters are stuck near planets or their carriers, while DropShips are pale imitations of WarShips.

WarShips are also useful in a couple of other fashions. The artillery platform is one such application. The first real, history-making application of WarShips was to obliterate a small island…I can find the name in my notes…"Strand Rock"…on Terra, and that graphically illustrated the potential of WarShips as artillery units. And… actually, I discussed this in my last lecture, under cargo of all things. The other is task force transport, which I think I also discussed at length in my last lecture when I evaluated the *Feng Huang*. Going in circles a bit here. You can download that last lecture, so go back and review that if you have any questions.

Detection

Here's a blurb on an important aspect of aerospace conflicts: finding your targets...

Compared to the vast sweeps of star systems—billions of kilometers—over which modern spacecraft operate, sensor ranges are disappointingly short. Short of the fabled and magical "neutrino scanners," the most effective sensors of modern ships are drive

ARES CONVENTIONS

I will comment on some past publications and recent media pronouncements regarding the destruction of space stations and JumpShips in the current conflicts around the Inner Sphere. There is a lot of crying about "violations of the Ares Conventions" when a civilian space station is destroyed. Well, it's true the Ares Conventions ruled against attacking civilian targets, including space stations, but the Ares Conventions ruled against virtually every other aspect of modern warfare.

Just as an example of how much was banned under the Conventions, all the battles that obeyed the Ares Conventions between 2412 and 2575 killed fewer soldiers than the two-year Fourth Succession War, or the last fifteen years of the Third Succession War. Conflicts under the Conventions were wars of maneuver, with opponents often surrendering when "checkmated." Pauses in battle were allowed for medics and coolant units to enter a battlefield. That's right, there were "timeouts" under the Conventions.

The Star League cast aside the Conventions when it went to war with the Periphery and no one re-adopted it in any depth, except some lip service that mercenaries pay to the front page and some loose adherence to the provisions for prisoners of war. In the past five hundred years, none of your favorite military units have ever obeyed more than a small fraction of the Conventions in any battle they fought.

The Conventions make a symbolic, well-known document that can be used to smear the Bad Guys as Really Dirty Bad Guys when they do something naughty on the battlefield. I also think it gets confused a lot with the unwritten rules of warfare that developed in the Succession Wars, which protected near-lostech like space stations and JumpShips. But don't expect any military force to take you seriously when you wave the Conventions at them. It will no more protect a space station or JumpShip than it will bring back battlefield "timeouts" and bloodless "checkmate" battles of maneuver that typified the late Age of War.

plume detectors, which reliably spot the unmistakable hard x-rays of fusion engine exhausts at ranges of about 20 to 30 million kilometers. On the other hand, the ranges of modern combat are mere tens and hundreds of kilometers. That means entire fleets can sneak through systems unobserved, but it can be hard to break contact once combat is joined.

Though infrared imaging figures prominently in ground combat and at aerospace combat ranges, IR and optical sensors offer only supporting roles to radar. Their most prominent long-ranged role is detection of arriving JumpShips. A Kearny-Fuchida drive is a source of infrared radiation for several reasons, including annihilation of matter at the arrival point and shedding of relative velocity differences between destination and origin jump points. This diffuse signature can usually be spotted at distances of about 50,000 kilometers.

A more subtle effect of hyperspace travel, the emergence wave, is detected with specialized military sensors. This can spot an arriving JumpShip at distances of up to 15AU. The effect of an arriving JumpShip on local space is a spherical "ripple" that propagates at light-speed. This is a fairly distinct electromagnetic pulse caused by the collapse of the hyperspace field. The light-speed lag means that if the detector is multiple AU from the target, the JumpShip has been in the system for tens of minutes and had plenty of time to maneuver, release DropShips or otherwise hide from reaction forces. Only large military spacecraft carry this system.

Emergence wave detectors are also useful for spotting arriving HPG signals, which generate the same emergence wave phenomena as JumpShips. The signals are quite a bit weaker than JumpShip "ripples," though, and thus detection ranges are often much shorter.

I don't think I need to explain much about active radar. You bounce a radio signal off an object and look at the return. The fancy details of how modern military radar works are topics for an electromagnetic physics course, not transportation technology. Bigger vessels can dependably spot targets with active radar at about 100,000 kilometers in range, while fighters and small craft are limited to about 10,000 kilometers. That, again, illustrates one of the shortcomings of fighters as independent military units: they're virtually blind.

Part of radar involves listening for the radio signals you broadcast, but you don't need to listen just for your own transmissions. You can turn your blaring radio emitter off and listen for the Bad Guy's signals. Large military spacecraft, which have electronic support measures (ESM), can reliably spot active radar units at about 1,000,000 kilometers in range. It's a feature rarely found on civilian ships, while small military spacecraft do not have sufficiently sophisticated and large radar receivers to spot the low-observability tricks of modern military radar systems.

The longest-range common sensor is the drive plume detector, which is a battery of x-ray and hyperspectral imagers that seek the distinctive super-hot particle flux of fusion motor exhaust. It goes without saying that fusion rocket exhaust is hot, but take a moment to consider just how hot it is. This exhaust is vastly hotter than the surface of the STAR—it's hotter than the core of stars, because the reactors are producing fusion reactions at much lower pressures than the core of a star. That means, if you remember your basic physics, the exhaust is so hot that it is primarily emitting in high frequency radiation. It's got a little visible light tail, some ultra-violet light and a lot of x-rays, especially for fusion motors operating in heat-expansion mode. Of course, in an atmosphere, the surrounding air gets heated to merely stellar surface temperatures and produces a distinct visible light display that we're all familiar with, as does excess hydrogen dumped into the exhaust during combat maneuvering. For all the energy going into the drive plume, it's fairly hard to detect in space because the exhaust is generally collimated and there's nothing to scatter the enormous x-ray signatures. If you happened to catch a glimpse right up the rocket nozzle, you might be able to spot the plume at billions of kilometers, but for the most part the wispy traces of x-rays and other light that get scattered in all directions are fairly hard to spot beyond fifty million kilometers. On the other hand, the detectors are pretty compact, so they're easy to install on every vessel.

Radio triangulation of common radio signals works fairly well at long distances, too. Civilian and small military spacecraft can usually triangulate radio signals at about half a million kilometers in range, while large military spacecraft with

ESM can manage much further. Such signals rarely have the low observability of active military radar and thus are easy to detect.

The last sensor system of note is the neutrino detector, and it's only notable for its performance. Essentially, modern military commanders virtually won't have to be concerned about these until they're in the Terran system or maybe over Strana Mechty. These giant sensors were only fitted on a percentage of old Star League WarShips, the big WarShips that could spare the massive kilotonnage for the detectors, and so the Clans might have a few left. The Word of Blake and ComStar reportedly had the technology as a result of inheriting Terra, but the latest speculation in military journals is that neither took the time or money to restart production because the high-performance neutrino detectors were an industry unto themselves. So, the Word of Blake might've had a handful of mobile detectors in service at the start of their crusade, but speculation has it that the Word's WarShip losses are so high they have none left except for planetary detector units on Terra.

And what could neutrino detectors do? If the Star League-era reports are true, they could just about read the serial numbers on a fusion engine at several AU distance. The detectors took hours to calibrate to the neutrino environment generated by the local star, but then could almost sweep the system for any neutrino sources—any nuclear reactor, fission or fusion, basically. With several hours of tracking, a neutrino detector could identify the make and model of a fusion-powered vessel, and only needed several more hours to establish a unique "fingerprint" for a vessel that could be recognized at a later date. You might want to take a minute and remember the properties of neutrinos before trying to suggest some means of shielding your fusion engines. A neutrino detector can see into the heart of star; there's nothing that can hide a reactor from the detector except to the turn off the reactor.

Boarding

I did this bit a few semesters ago when people got excited about some dramatic boarding actions. I was surprised to find it was relatively feasible, more than I thought…

In an era where space combat involves shots exchanged at hundreds of kilometers' range while opponents may be moving at tens of kilometers per second—or much more—relative to each other, there still manages to be a place for getting troops onto the other guy's ships. I thought boarding only occurred on space stations or JumpShips or vehicles with crippled engines, but apparently the marines among today's militaries even plan for boarding live ships. I have to salute such folks. Even a sluggish ship like a *Behemoth*-class DropShip or *Aegis*-class WarShip can out-accelerate all but the highest-performance sports cars. To put it another way, if they were atmospheric vessels, they could go from a standing start to Mach 3 in two minutes. And when one of those giants starts twisting…yes, you start to understand the difficulty of boarding.

There are three principal assault techniques. Far and away the most popular is the shuttle assault, which delivers infantry, usually space- or battle-suited, to the target. They then have the chore of attaching to the target, which is not easy even with their specialized grapples. But unlike free battle armor and free BattleMech assaults, which I'll discuss momentarily, assault shuttles have the thrust to match the maneuvers of most targets. In fact, dedicated assault shuttles usually have much better acceleration than their targets, like the NL-42 "Battle Taxi," which can manage 4.5 gees.

Free battle armor attacks depend on the limited space maneuvering capacity of certain battle armor suits. This is a risky form of attack best reserved for targets with crippled engines—I mean, even riskier than other boarding actions—because a minute of determined maneuvering by most DropShips and WarShips can result in the battle armor troops smacking into their target at better than a kilometer per second. Then your brave battle-armored soldiers are tinfoil-and-tomato-paste smears on the nose of the ship they were trying to board.

Free BattleMech boarding actions are a particularly bad application of BattleMechs, kind of like using infantry to ignite the engines of a DropShip by holding a match into the engine nozzles. The "free BattleMech assault" process entails releasing BattleMechs at a target ship, depending on the abysmal maneuvering capacity of their jump jets and miniscule reaction mass capacity to manage a landing, then attempting to do something constructive on the hull. Like free battle armor boarding actions, a BattleMech can quickly find itself playing the role of a quadriplegic fly facing a giant flyswatter if the target has live engines. BattleMechs have a hard time staying on a ship's hull, too. Even if they have some sort of magnetic feet or grapple—which is decidedly not standard on BattleMechs—the BattleMech has about as much chance of staying on the hull when the target's engines light up as it has of standing upright on the side of a skyscraper. Unlike skyscrapers, JumpShips and WarShips can also pivot fast enough to impose noticeable horizontal G-forces.

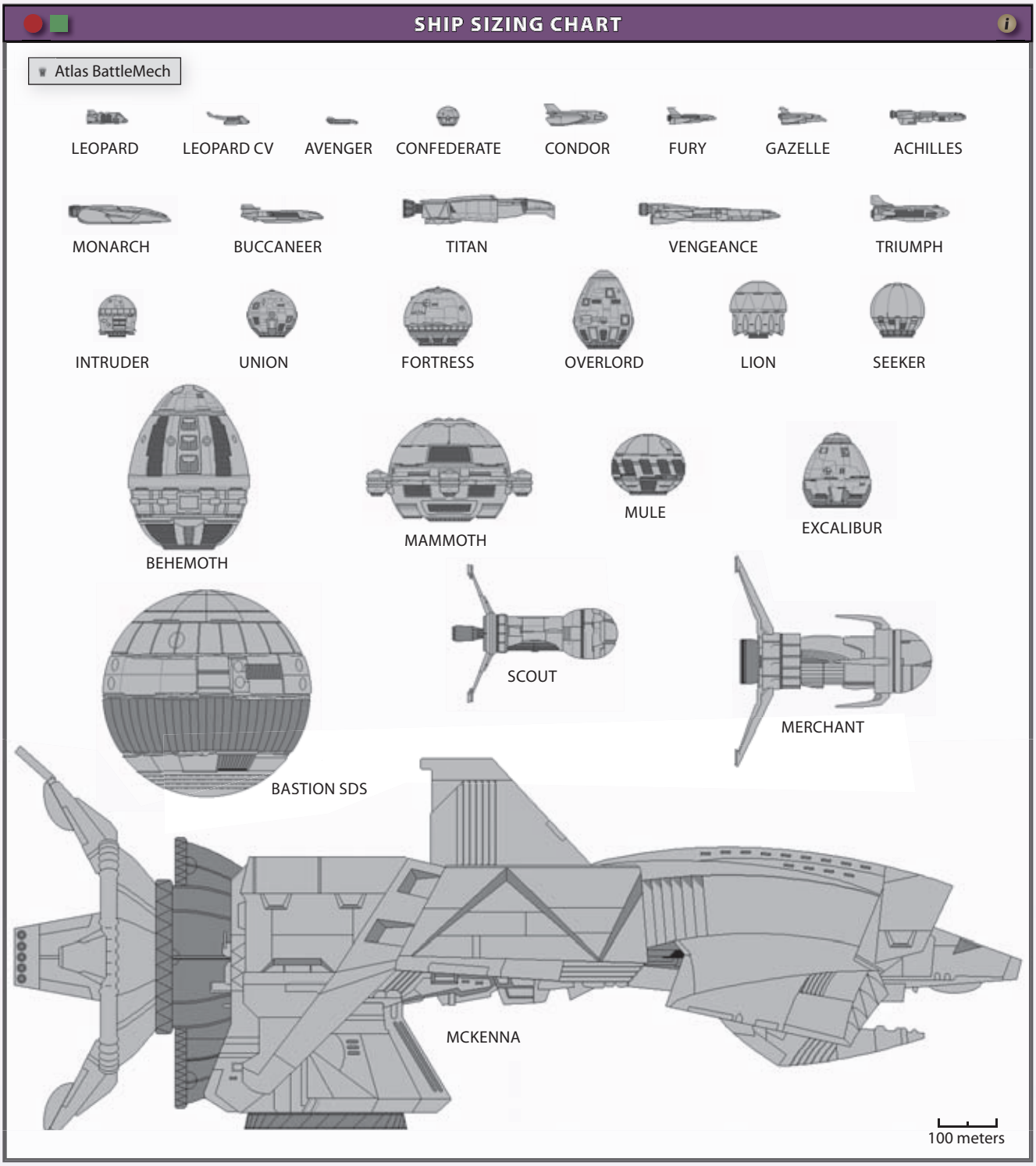
Darn Sir Isaac Newton for making the "down" direction on spacecraft in the same direction as their engines. If acceleration manifested perpendicular to the thrust direction, then WarShips and JumpShips would be oriented like seagoing ships and regiments of BattleMechs could stand all over them to shoot at each other and at swarming fighters, like in the children's cartoon "The Littlest Atlas."

Anyway, if a BattleMech can get loose on a ship or space station, or it gets inside the ship, then it can certainly wreak havoc. But deploying BattleMechs outside ships, let alone in boarding actions, is a move of pure desperation.

Now, once you have troops on the target ship, there's the question of what they do. Most boarding actions, as the name suggests, involve trying to get inside the target. Once inside, marines generally attempt to seize control of the vessel by attacking the bridge and engineering or other choke points, like life support. Alternately, when the ability to control the ship appears to be in doubt, attackers may prefer to cripple or destroy the boarded vessel, which also involves going after certain key sections—the K-F drive core, magazines, engine room and so on.

Contrary to what the media may tell you, marines rarely hold back on heavy weaponry because they are worried about puncturing the hull. Bulkhead and hull materials are tough enough to laugh off most individual bullet and energy shots, and those that do penetrate generally only leave small holes that cause proportionally slow leaks. The "explosive decompression" of fiction where a large section of wall suddenly blows out because of a small bullet hole is just that: fiction. Spacecraft hulls are not made of window glass. For that matter, you can generally safely plug a bullet hole with your finger. You won't be sucked out; one bar of atmospheric pressure can't force a human body through a bullet hole. The tip might bruise from the vacuum outside but…I'm getting off track.

The point is, boarders interested in capturing a vessel and crewmen interested in preserving their ship from capture use various "accelerated energy transfer" projectiles, needlers and other lightweight attacks because many key systems are not as tough



as the hull material. Hosing a battle armor's heavy machine gun down a typical corridor might not blow out the hull, but you can rupture a pure oxygen line; ignite an emergency oxygen candle or spill chemicals from an emergency air scrubber; sever any of half a dozen important data lines; burst a sewage line; shatter a local computer control module; or cause a lot of other mayhem. And that's just in a simple corridor. Imagine a firefight in an engineering compartment or the computer deck of a JumpShip.

Planetary Combat Operations

Here's my intro to what should be a good few chapters on the mechanics of a planetary assault…

It is not enough to achieve victory just to show up at a planet with BattleMechs, tons of ammo and a flotilla of DropShips. You need to know the target planet ahead of time. You need to know the terrain, the climate and the microbial threats—are there any vicious local diseases? Human factors need end-

less study, too. Politics, primary infrastructure choke points, key industries, demographics. No, invading a planet is not as simple as showing up with enough guns and ammo.

This isn't a military history course, so I'm not going to get into the endless details of how to conduct a planetary combat operation. What matters to this course is how spacecraft and space travel figure into these operations.

Obviously, JumpShips and DropShips allow the invaders to reach a planet, and allow reinforcements to aid the defenders. The role of DropShips as troop transports doesn't stop once forces are on the ground, either. Clever commanders have often made use of DropShips to transport troops from location to location on a planet faster than any other mode of transport.

Spacecraft are eminently important for keeping off-world attackers fed, armed and fueled—an armored regiment that finds itself on a planet without readily plundered fuel supplies is going to be an immobile set of pillboxes very quickly unless it can ship in the kilotons of fuel needed by its hungry combustion engines. Reasons like this make me wonder why any military with interstellar aspirations deliberately chooses combustion engines and ammunition-dependent weapons unless industrial shortcomings force the choice. You only have to deliver a tank or 'Mech to a planet once, but you have to keep delivering ammunition and fuel.

Anyway…most spacecraft can offer support other than transport. Just about any military spacecraft carries sensor and communications suites that make them excellent orbital observers. Aerospace fighters make exceptional scouts, being able to dart around a planet in under two hours. Most large spacecraft can refuel aerospace fighters that divert to orbit between ground strikes. Military aerodyne DropShips can offer supplemental air strikes, if one doesn't mind risking such expensive hardware in that role. Other DropShips have been pressed into the role of mobile fortress.

COMMUNICATIONS

That just about wraps up combat…I suppose the next aspect of spacecraft is communications. It's less exciting than the combat-related aspects of spacecraft, but still critical and necessary. This section is actually something Dr. Readly had planned for you in a few weeks.

Internal Communications

Most communications within ships are carried by fiber optic lines to specific workstations, intercom panels and speakers; fiber optics afford a maximum of bandwidth and no chance of eavesdropping. Speakers and intercom panels distributed throughout the corridors and rooms of a ship allow passengers and crew to send messages to the entire vessel or selected areas, depending on their specific communication privileges.

Fiber optics can shuttle enormous amounts of information through a ship, but being tethered to a fiber is not convenient for all crew and passengers. Personal communicator units (in conventional belt, wrist, chest and headset forms) allow wireless freedom via low-powered repeater units in the intercom panels throughout the ship. When infrared signals are not used, radio signals of sufficiently low power not to penetrate the hull are the medium of choice. More powerful radio systems might be partly behind the myth of the Star League's *Bugeye*, which supposedly could "hack" into another ship's systems and listen to crew conversations. The *Bugeye* might've just been listening to noisy wireless intercom systems.

External Communications

For the past eleven centuries, external communications have fallen into three categories: radio, laser and HPG…wait, HPG's less than five centuries old. Anyway, radio communications are generally broadcast, which is helpful in many circumstances like talking to large groups of units, but broadcasting is less often useful for military vessels interested in stealth. Radio transmissions can tighten up their beams, but not nearly to the extent of lasers. The lower frequencies of radio transmissions also limit their bandwidth, the rate of information transfer. Radio transmissions allow any interested listener to intercept signals and, as I discussed above, radio transmissions are vulnerable to triangulation.

Still, radio signals serve many uses in modern spaceflight. Radio communications serve as a staple of Identification Friend-or-Foe (IFF) systems. Most commercial vessels used to be registered—or were supposedly registered—with the ComStar Terran Registry of Spacecraft, but people have been less willing to share with the Word of Blake since it seized Terra. Even so, I'm not sure how many commercial vessels used to register with ComStar. As recently as the 3020s, ComStar was claiming there were only 2,000 JumpShips and 25,000 DropShips in service in the Inner Sphere, but the actual number had to be higher by at least an order of magnitude (or two) to meet the observed tonnages of bulk freight in necessities like food, petrochemicals, ores and…and I'm off track again. It is worth noting that IFF can be faked despite elaborate security precautions, and with increasingly incomplete ship registry databases, it's getting easier than ever. You pretty much need to resort to visual identification or boarding to confirm a ship's identity.

Laser communications bypass most of the shortcomings of radio. Lasers are generally much more focused and have much smaller sidelobes, and being higher in frequency they have much higher bandwidths. No, don't ask. For further explanations of sidelobes, bandwidth and many other facets of electromagnetic communication, please take an electromagnetic physics course. The short description is that laser links use relatively low-powered lasers, just a few kilowatts usually, that are focused sufficiently by multi-meter mirrors (obviously smaller on small craft and fighters) to only illuminate the target vessel at distances of thousands of kilometers. To intercept a laser transmission, you virtually have to be inside the beam, and the transmitting and receiving vessels will notice that. The only drawback to laser links is their very focus: a laser link is generally good only between two vessels. DropShips typically carry a couple of laser links, while JumpShips carry one per docking collar and up to a half dozen others. WarShips and battle stations are the exceptions to the normal paucity…hey, I used paucity in a sentence…of laser links. These units will carry dozens of laser links to communicate securely with a whole fleet, all the way down to fighters.

HPGs essentially only appear on WarShips, and not every WarShip, which means they're almost a non-issue for most considerations. But, let's face it, any hyperspace technology is worth some time in class.

HPGs famously generate an artificial jump point of microscopic scale and send a signal through, so they can even work in planetary gravity fields. This signal can be sent for up to fifty light-years,

depending on the HPG in question. While the "jump" involved in sending the signal over many light-years carries with it all the usual hyperspace issues, like I was talking about with emergence wave detectors earlier, the actual signal is a conventional electromagnetic signal, generally a radio frequency burst. Think about that a second: you don't need an HPG to receive an HPG message. You need a radio. And you need the proper decryption codes—ComStar didn't survive the Succession Wars by letting anyone decrypt the messages it delivered.

Another misconception about HPGs is their transmission times. ComStar and the Word generally wait hours or days to accumulate a good packet of traffic to send between planetary HPGs, but HPGs can transmit as fast as their power plants can recharge the HPG. Since they're only sending microscopic amounts of matter—energy, really—through hyperspace, HPGs can recharge and signal quickly, though the power required for the artificial jump point of even microscopic size is fairly impressive. Entire chains of HPGs can be arranged to support real-time communications across great distances, as has been famously accomplished by Clan Khans and our former Archon.

While the radio signals from an arriving HPG burst can propagate up to 4AU from the arrival point, such long-range reception may entail considerable speed-of-light delays. This isn't a problem when signals are only arriving every few hours or days, but it is a problem for the real-time "HPG command circuits." To minimize speed-of-light delays, HPG signals in command circuits are targeted to within 1,000 meters of each relay unit. The emergence wave of an HPG burst is trivial compared to that of an arriving JumpShip—it won't shred a ship. But the electromagnetic effects can blind sensors and fire control systems, particularly when they're being received several times a second as part of an HPG command circuit.

You might think, "Wow, an HPG would make the ultimate weapon because it could blind and stun any target," but no, HPGs do not work in that fashion. HPGs are meant to target objects light-years distant for which they have exceedingly exact coordinates. Units in command circuits and various remote relay systems, like those of ComStar's Explorer Corps' DRUM network, share their exact coordinates with neighboring HPGs to improve aim. Fast-moving, maneuvering local targets are impossible for HPGs to hit.

DAILY ROUTINE

Next topic on the list…this doesn't flow well at all. From communications to daily life on ship? It's topical to transportation tech, but….

Daily routine onboard spacecraft does not necessarily follow the niceties of planetary life.

Watch Cycles and Drills

Virtually all spacecraft, except for the Capellan Confederation's Xin Sheng'd national merchant marine and Navy, use "Terran Standard Time," which is basically a renamed form of Greenwich Mean Time.

Let me interrupt that old recording to point out that GMT is fair game on Dr. Readly's exams, so look it up…

What spacecraft do on this timekeeping standard differs. Military ships tend to adhere to six-hour watch cycles that put crewmen on duty for six hours, then give them twelve hours off duty. And by "off duty," I mean, "not necessarily carrying out primary duties." There's generally a four-hour period with secondary duties and training, leaving eight hours for rest, recreation and meals. This may mean crewmen end up standing twelve hours on watch per 24-hour day. Civilian spacecraft are more lax on this matter and may prefer eight-hour watch cycles with meal breaks, allowing crewmen almost sixteen hours off-duty. Then again, they may follow the military standard.

On virtually all ships, captains take care to rotate duties to avoid complacency in the crew and often schedule training drills. These emergency response exercises keep the crew trained and ready to deal with fires, hull breaches, enemy attacks and—I'll say it again—fires. Firefighting is critical onboard sealed vessels like spacecraft. Boarding drills are often particularly entertaining due to their use of non-lethal sport equipment and the chance to "shoot and kill" obnoxious officers or crewmates who end up on the other side of the drill.

Food

Interrupting again, I think I used the term "food-in-a-tube" in my last lecture, but that's mostly—not entirely—a product of lazy or novice space programs. New transport companies or groups that are just re-establishing a domestic space travel capacity tend to re-invent "food-in-a-tube," thinking that freefall dining requires elaborate precautions to avoid crumbs, free-flying blobs, and other catastrophic mishaps…

In fact, covered pouches and some food package restraint—like a tray—are sufficient to hold fairly normal foods in place. Modern spacecraft generally have endless power and no shortage of spare volume for refrigerated food storage, so freeze-drying and other food-abusing "space food" treatments are only necessary for foods stored for long periods without refrigeration, such as in fighter emergency food lockers or lifeboats. And, of course, some fighter cockpits roomy enough for extended deployments include amenities much like BattleMech cockpits, so they can do better than "thermal stabilized, intermediate moisture meals." So even freefall food can be pretty good, and quite normal—it just takes a little skill to eat it.

If you're worried about crumbs, spacecraft operators have figured out that an air intake placed in the dining area will inhale most free-flying crumbs and droplets. These intakes are filtered, obviously. Actually, spacers have known since the first space stations, the first spacecraft with large open air volumes, that loose items in freefall tend to be carried by air currents to air intakes. If you drop a screw or pen, search the local air intakes.

And when you get to gravdecks, even low-gravity ones, dining is much easier. The only unusual features might be the cups and soup bowls for low-gravity gravdecks, which need extra care to prevent sloshing.

So, I said normal foods can be eaten on most spacecraft. What foods do spacers get? Generally, pretty good food. They

visit a wide range of planets with different cultures and different foods. Most large spacecraft that visit different systems have continual, almost weekly opportunities to refresh their food stocks. Since large spacecraft rarely have a shortage of volume for food storage, months or years of good food can easily be stored aboard a ship or station. When refrigerated volume runs out, standard radiation treatments, thermal treatments like pasteurization and various modern preservatives keep food fresh without mangling it like freeze-drying.

An alternative to all preserved foods is fresh foods, which are almost universally grown in a hydroponics facility. The idea is to grow completely fresh food right on the ship, perhaps producing a closed-loop life support system that will indefinitely sustain the crew. The idea is widely used on the *Invader*-class JumpShip and I suspect the *Invader*s are about the only ship to make use of it because the entire system is completely automated, otherwise no one would bother. Honestly, the variety of fresh foods a JumpShip or DropShip can acquire from planets they visit dwarfs the output of these small hydroponic "farms" and modern food preservation means there is little difference between fresh-from-hydroponics vegetables and fresh-from-a-bag planetary vegetables. If you plan to traipse through the Periphery or think your K-F drive might fail and leave you in an uninhabited system, then yes, hydroponics are pretty useful. But modern spacecraft are rarely far from resupply, even on long-duration military deployments, and mechanical life support systems are more robust and easier to repair than vats of fruits, grains, veggies and algae.

Recreation and Exercise

Next bullet on the schedule: how to relax on spacecraft. I mentioned the value of exercise in my last lecture, but this hits some new points…

On larger spacecraft, many options are usually made available for recreation because crews may be stuck on the ship for months. On a cramped military DropShip, this might be a considerable collection of vids and computer games, while spacecraft with gravdecks can provide some space for sports. Sometimes even large-court sports like football (any version) or basketball will be seen on space stations' large gravdecks, but the one universal rarity is a swimming pool. A small pool of just 40,000 liters is forty tons of water. WarShips sometimes afford pools for their crews, but they are generally zero-G pools to avoid the mass needed to balance such an off-center weight on a gravdeck.

From sports we get to exercise. Exercise can be particularly important on JumpShips, which spend decades in milli-gravity conditions at jump points. As I mentioned in my last lecture, it's not enough to sleep and eat on gravdecks—keeping good muscle tone and bone density generally requires a regimen of exercise on a gravdeck, with certain supplemental drugs. Even so, some long-time JumpShip crewmen can have seriously compromised physiques. DropShip and WarShip crewmen benefit from considerable periods under acceleration that simulates natural gravity without the inner ear problems of gravdecks, and thus generally have laxer exercise requirements than JumpShip crewmen.

Quarters

How do crew and passengers live on ships? It's not universally elbows-and-…er, noses. Here's a bit I did when I was a junior professor, years ago. There's a lot of donuts between that me and today, isn't there?...

Quarters vary widely. Military vessels, which often dedicate large volumes to "critical military hardware," tend to have cramped quarters. The *Union*-class of the Third Succession War is a good example. Despite being larger than this building, it crammed about thirty crewmen into a bunkroom distinctly smaller than this lecture hall. As a matter of damage control and easy maintenance in an era when photopolymer lighting seemed like lostech to the under-educated maintenance personnel, the air filtration system was kept as simple as possible. This meant it could get pretty ripe in those cramped quarters. And while ComStar famously blamed the simple air filters in their *Technical Readout: 3025* publication, the old *Unions* also had simple water filters and limited water storage, which meant very limited bathing. It got ripe on those ships pretty fast.

To compound the problem, military ships were often overloaded with additional passengers, like technicians, ground security details, command lances and so on. In such circumstances, there were not enough berths for each crewmember and passenger, so bunks were shared in rotating shifts: the "hot bunking" system, so called because your bunk was still "hot" from the last guy when you climbed into it. I just wanted to define "hot bunking" in case anyone else saw "Danger Dave and the Amazon Express" last night and had another idea about the meaning of "hot bunking" based on that over-used one-liner of his. Real hot bunking and limited basic amenities were—and are—major sources of morale problems on military vessels.

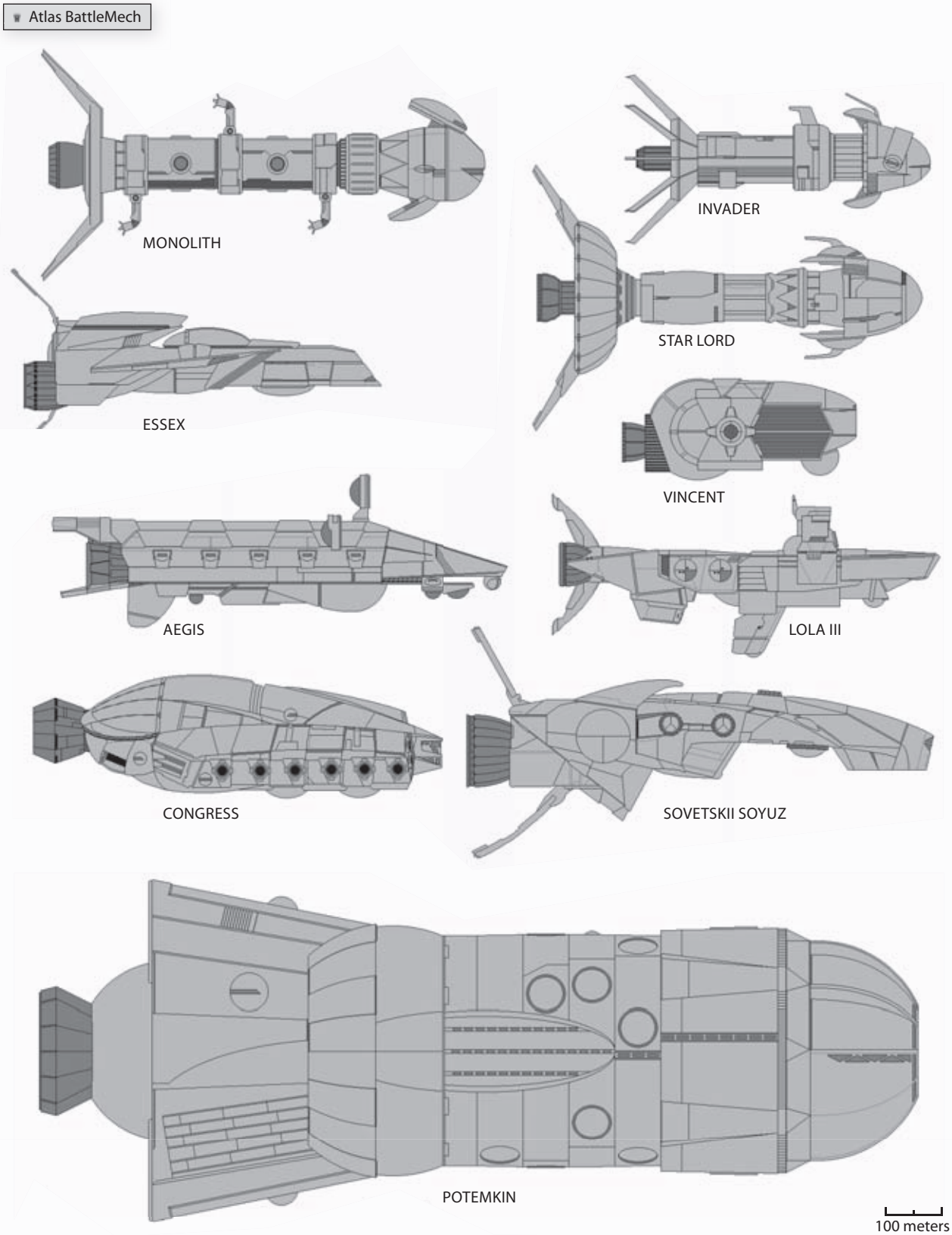
While recovered technology and the associated improvements in education mean that many modern military DropShips have improved facilities for their crews, infantry bays generally remain the domain of "old school" passenger facilities. A typical infantry bay for a foot platoon allots about 175 kilograms for each soldier, his gear and any life support and shared amenities like restrooms and recreation space. Giving each infantryman a typical 5-ton steerage-class allotment of quarters, life support and amenities is a common goal among modern military ship designers, but infantry accommodations are invariably the first thing to get cut when a new spacecraft turns out to be overweight. I mean, we all know how unimportant infantry are—just ask any MechWarrior.

Civilian ships generally give much more volume and weight for crew and passengers, especially passenger liners, and are willing to pay extra for improved air and water quality. The closest civilian ships might come to "hot bunking" is to split officer-class quarters, the so-called luxury quarters, between two passengers or crewmen, effectively reducing the quarters to steerage-class. But it'll have much nicer brass trim than your normal steerage quarters.

It is worth noting that the mass and volume of quarters are not often linked. The steerage-class quarters of a JumpShip may have as many cubic meters per crewman in personal and public spaces as the entire berthing space of a military DropShip. The mass of quarters is generally determined by life support budgets (how much water and air are given per person), quality of amenities and number of amenities. Elbow room weighs almost nothing; personal kitchenettes, exercise machines and a big water budget can add tons.

On that note, I'd observe that only a few modern spacecraft can honestly justify volumetrically cramped quarters for their crew and passengers, and those are fighters and small craft. However, you still find cramped, stinky, poorly furnished quarters throughout the JumpShip and military DropShip fleets of the Inner Sphere. Even some WarShips are notable offenders.

SHIP SIZING CHART



Despite having unused volumes—for unspecified "future system expansions"—larger than this building, the quarters of the first block of *Fox*-class corvettes were notoriously cramped. Admittedly, the *Fox* had been approached as a short-lived prototype WarShip that only had to live through a few years of trials before being replaced by a fleet of *Avalon*s and *Mjolnir*s, but Fed-Boeing was really just in a hurry and didn't bother. Making spacecraft human-compatible is one of the most exacting and time-consuming parts of designing a new vessel.

DOCKING AND LAUNCHING

Here's another complete topic change: docking and launching. When viewing this, please keep in mind the skyscraper layout of spacecraft I mentioned in my last lecture…

Docking spacecraft is not a trivial operation. Both vessels can move in either of three dimensions and for every action, there will be a reaction. When one vessel is much larger than the other, the problem is somewhat simpler because the larger vessel is not going to be seriously jostled by any mishandling on the part of the smaller vessel. Basic conservation of momentum. Still, when the smaller vessel masses in kilotons—as might be the case of a DropShip docking with a WarShip or space station—any mishandling can cause massive local damage.

Small Craft

Fighters and small craft have the easiest time docking because they are usually small enough that docking bays can be satisfactorily reinforced to survive a poor docking run. Also, they tend to be much, much smaller than the ships they dock with, sometimes thousands of times smaller in the case of WarShips.

The general procedure for docking entails the larger vessel coasting, effectively seeming stationary to the approaching small craft, while the small craft maneuvers closer under the power of its main drive. Within a kilometer of the carrier, the small craft will shift to maneuvering on its reaction control system (RCS) alone. Final docking is generally accomplished by coasting slowly into the bay, where various systems are used to secure the small craft and move it out of the way of other vessels.

It is feasible and a practiced maneuver for small craft to dock with a maneuvering carrier, but even with perfect coordination and simple, straight-line acceleration by the carrier, there is room for enormous damage to both vessels. A small craft or fighter trying to pace an accelerating DropShip must use its main drive until the instant of capture, and even a fighter's drive can cause massive damage to a large vessel. In an ideal situation, the carrier will have stern docking ports, like the *Vengeance* class, which allows the fighter to safely run its main engine—though the small craft will be right beside the carrier's own drive plume. For side docking bays, you can hope they have a telescoping capture arm or crane, otherwise powered docking is just begging for a mishap, such as a late cut-off of the fighter's main drive.

Launching is generally much easier. The only risk occurs when the small craft is dumped out a stern bay and the carrier is running its main drive—the small craft needs to be careful with its first post-launch maneuvers to avoid a bad case of "moth in a blowtorch" syndrome. The preferred means of launch is through side ports, which gets the small craft clear of the carrier and its drive plume. Fighter and small craft bays usually include an electromagnetic catapult to eject the small craft with some velocity so the craft gets clear without firing its own motors. In these launches, the drive plume danger is reversed—the small craft must be careful to orient its main drive before firing it to avoid damaging the carrier.

The one form of launch you only see in the cinema is bow launches, or at least bow launches under thrust. A launch out a hypothetical bow bay door on a carrier would not be much different than a side launch if the carrier was coasting. Like side launches, the small craft would have to re-orient its main drive before accelerating. This turns into a real problem when the carrier is accelerating. DropShips and WarShips are portrayed as ponderous compared to fighters, but don't be fooled by the media. A *Vengeance*-class carrier can accelerate at 3 Gs—0 to 100 kph *each second*. Name a sports car that can manage that. Even with a powerful catapult boost, a fighter would only have a fraction of a second—yes, a fraction of a second—before the carrier overtook the fighter and slammed into its rear at 3 Gs. One of the frequent users of bow doors, the *Vengeance*-class, has long docking bays that provide a lot of fighter handling room when coasting and bow doors are helpful at those times, but when under thrust those long docking bays are subdivided into dozens of tiny decks and fighters have to be ejected perpendicular to the thrust axis—out the dorsal, ventral, starboard, or port sides.

Large Craft

Large craft docking and launching operations are somewhat more complicated. While a wayward fighter in a docking bay can largely be contained, a mishandled DropShip can cripple a JumpShip docking collar at even low velocities. Because DropShips, JumpShips and WarShips do not pivot and translate as responsively as a small craft, large craft docking operations typically take about half an hour from the time two vessels rendezvous and match velocities. And the docking is always performed while coasting.

In cases where one large craft is still much smaller than the other, such as DropShips with JumpShips, WarShips and many space stations, the larger vessel simply waits passively, since it is likely less agile on the helm. Generally, after navigating to within centimeters of contact, final docking is accomplished by mechanisms in the docking collar or cargo bay door—dozens of hydraulic clamps, magnetic grapples or the famous giant arms of the *Monolith*-class JumpShips.

For vessels of similar size, like a WarShip and space station, they both might maneuver some, but the preference is to keep matters simple by letting one ship do the final maneuvering.

Undocking is rather simpler than docking. The smaller ship uses its RCS to back away until it can safely orient to use its main drive and that's about it—the process pretty much lacks the risk of collision that accompanies docking. Undocking is always done while coasting because large craft are not nimble enough to handle a launch under thrust. Also, orientation is often problematic for undocking under thrust. Spheroid DropShips are typically docked stern-first to the K-F drive vessel, while aerodynes tend to dock belly- or back-first to the JumpShip, which would put their decks "sideways" compared to the "engine-is-down" orientation of their JumpShip. This means that K-F drive vessels rarely accelerate with DropShips attached, so launching DropShips under thrust is almost a non-issue.

For the record, DropShips often stay attached while the JumpShip is station keeping at a jump point, but the milli- and micro-G thrust used at those times is barely noticeable even in an oddly-angled DropShip. It is, for all intents and purposes, free fall.

EMERGENCY EVACUATION SYSTEMS

Modern large craft rarely have a single "Jesus bolt" that causes the entire spacecraft to suddenly need evacuation when it fails, so ship evacuation is rare, but it happens. The method of evacuation depends on the nature of the emergency and what options are available.

The preferred method is transferring to another ship, since large spacecraft have the best ability to handle large numbers of evacuees and injured. However, if the distressed vessel is not already docked to another ship, this sort of evacuation generally involves small craft. Captains loathe docking their own large craft to a distressed spacecraft because doing so endangers both ships. Imagine a fuel explosion on a DropShip while it is docked to another DropShip, or a JumpShip. Actually, I have to wonder how fuel tank explosions occur in space, though they seem a somewhat frequent cause of combat casualties. It's not like there's enough oxygen on the ship, and certainly none around the vessel, to cause all that hydrogen to explode. But I'm getting off track again….

The next option is lifeboats and escape pods. These occasionally get confused, but to settle the matter: escape pods have some rocket-powered maneuverability and are intended to enter an atmosphere, settling to the ground under a steerable parasail. Lifeboats cannot handle atmospheric entry and are simply meant to drift in space, providing a safe haven until a rescue unit arrives. Escape pods tend to be more cramped and have less endurance in space than lifeboats, relying on battery power. Lifeboats deploy solar collecting sails for indefinite electricity, though life support and food supplies are limited. The newest trick with lifeboats is to use inflatable sections to greatly increase volume after launch, making the days or weeks in the small vessels much more tolerable.

A few vessels, including fighters, carry PRUs, personal reentry units. These are derived from that insane sport spacediving, which entails jumping out of a perfectly good orbital platform and entering the atmosphere in almost nothing but a spacesuit and the PRU. These are usually foam or inflatable ablative shields that provide a semi-controlled re-entry. They are controlled enough to usually hit a targeted continent, but you'll need to supply your own landing gear, like a parachute. Experimental PRUs appeared at the dawn of the space age and sport units have a sufficient safety record to prevent them from being banned in most sane nations, so they're probably going to stick around for a while longer. However, they're not the best way to escape a distressed vehicle unless they're the only way.

A form of evacuation that sometimes includes a PRU is the fighter ejection seat. Ejection seats sometimes turn up on small craft and smaller DropShips, but are mostly found on fighters. You're probably fairly familiar with ejection seats, so I won't get into the details. The space-related details are that they often include a distress beacon, supplemental power and air for a pilot's spacesuit, and you do need your own spacesuit. Ejection seats have a pretty low success record when used in space without a spacesuit. Between the life support in a typical spacesuit and the ejection seat, a fighter pilot generally has about 24 hours to live after ejection.

Speaking of spacesuits, the all-time least preferable means of evacuating a distressed vessel is jumping out of the spacecraft in a spacesuit and nothing else other than a maneuvering pack, if you can find one of those in time. A typical space suit will keep you alive for 8 hours without supplemental packs, while the emergency suits found throughout most ships are only good for 30 minutes without supplemental support. Spacesuits all include distress beacons that generally will last many days longer than your life support.

GRAVITATIONAL EFFECTS

Maybe I should've talked about this earlier, along with exercise and recreation…oh, well, it won't make this lecture anymore confused to put it here. Okay, spacers encounter a wider range of G-forces than the steady 1 G of DropShips or planets. I mean, the planetary average. The notional average based on Terra. Back on track…the two notable variant gravitational experiences are microgravity and high gravity. Let me splice these in …

High Gravity

Spacers rarely encounter high gravity, anything over 1 G, for more than a few hours at a time and usually only for minutes in combat or when launching from a planet. The reason for the limited use is that high-Gs do not cut travel times as rapidly as most of us would like—damn you again, Newton. Twice the acceleration does not halve travel time; instead, it divides travel time by the square root of two. I'll get into this more in a bit, but if you took your freshman mechanical physics, you should be able to look at the equation relating distance to acceleration and time and see the problem. So, there's not much point in punishing the crew with days of 2 G or 3 G acceleration, since you won't be getting there much faster than 1 G.

A few extra Gs are rarely a problem to any prepared individual. The problems stem from extended duration and really high gravities. Human tolerance for high gravity decreases exponentially with duration and intensity.

Duration and intensity. A healthy human might…not "might," I should say "has" and "are"…survive at 1.5 Gs for decades on the highest-gravity worlds humankind has settled. They can patently walk, talk and live in those conditions. There's a high rate of premature deaths due to heart failure and a higher rate of infant mortality, but it's tolerable. At 2 Gs, though, you see a dramatic drop in survival durations. Yes, the strong can still walk and talk at 2 Gs and more—heck, look at me. I'm nearly twice the healthy mass for my height and I get around fine. But I'm also not lifting blood against 2 Gs. Healthy people start having sudden heart failure. Apparently healthy people faint because the human heart just can't lift blood against 2 Gs, not vertically. Sure, some people could live for years in those conditions, but they're the exception. By 3 Gs, some fools can stagger around a bit, but entire crews have to be seated and preferably horizontal for the hours or days they're subjected to

that, and if you push for days, you're almost certainly going to suffer some crew casualties. At further elevations in G-force, people start blacking out almost immediately.

With proper protection—like G-suits and proper seating—healthy spaceship crewmen can endure 6 Gs "indefinitely" as reckoned by combat, or tens of minutes as we might count it, though they'll rapidly fatigue. Such protected spacers only face quick blackouts above 10Gs. Unprotected crewmen are likely to black out at 5 or 6 Gs, and will rapidly fatigue at 3 Gs.

Microgravity

Zero gravity, often more accurately called microgravity due to various microscopic acceleration sources, is basically the condition where everyone's floating around because there's not enough centripetal force, linear acceleration or old-fashioned gravity. I'd even say normal jump point station-keeping thrust falls in this category, though that's really "milli-gravity," if you remember your metric prefixes. JumpShip crews spend the vast majority of their time in these conditions—at least, if they're not on gravdecks—and WarShip crews may spend significant time in these conditions as well. DropShip crews generally spend most of their time under 1 G as their ships rocket back and forth.

Long-term exposure to freefall…could you get through Lyran primary or secondary school without knowing this? Bones decalcify and most muscles atrophy. For a great many centuries before the Third Succession War, there were drugs and even genetic therapies—in places that tolerated that crap—to reduce bone decalcification, but muscle loss always had to be treated by exercise.

Moving about in freefall is interesting. For short distances, you can push yourself along with very light motions. I do mean light motions—it doesn't take much gravity-born strength to hurl someone at dangerous speeds into a bulkhead or another crewmember. Ships with longer corridors frequently use stationary handholds and footholds to guide travelers, while JumpShips and WarShips may use powered hand loops to pull crew around in a controlled fashion. The standard coloring is blue handholds are heading toward the ship's stern, red toward the bow, green is counterclockwise around a deck and yellow is clockwise.

For spacers who can't find a convenient freefall handhold or foothold or other anchor, there are Velcro and magnetic shoes. These are options of last resort. While cheap vid directors like to use "magnetic shoes" as an excuse not to record their tripe in actual freefall conditions (like Danger Dave), such shoes actually offer little advantage. They're basically good for holding you in place. Trying to simulate walking in 1 G with a magnetic field around your foot verges on folly because when you walk in gravity, your moving foot does not have the weight of your body over it—you put your weight on the stationary foot. Having to lift a foot against magnetic or some other retaining force that approaches full bodyweight is unnatural. The reality is that the experience of simulating full bodyweight through such shoes or boots is like floating underwater with heavily weighted shoes. You get to float around like a waving seaweed anchored to the ocean floor. With practice, magnetic shoes can be a useful aid to movement and they certainly give a quick anchor against weapons recoil—for you prospective marines out there—but they entail an entirely new way of using your ankles and legs to keep you upright against your upper body inertia. It takes skill, and it's never as easy as normal walking—and running, which involves both your feet off the ground at the same time, is right out.

That, by the way, should give you some inkling of the problem that BattleMechs and battle armor face when trying to stay on the sides of an accelerating ship. They tend to flop over at the ankle actuators, assuming their feet manage to stick at all—it takes a good MechWarrior to maneuver a 'Mech on the surface of a non-maneuvering ship, let alone one that lights up its engines.

INTERNAL ATMOSPHERE AND ENVIRONMENT

At least this bit kind of follows the last. First, health problems, and now the machinery that keeps you alive in space. Yeah, I wasn't twice normal mass back when I gave the following lecture, was I?...

Air

I touched on this under quarters, but some other details about life support are worth regurgitating before your next quiz. Obviously, in an enclosed environment like a spacecraft, air is a serious concern. We had two workers suffocate on campus while they were working on a water tank several weeks ago, and that space even had an open manhole. The situation is potentially much worse on a spacecraft, since you don't have the convenience of gigatons of atmosphere outside.

The good news is, most spacecraft carry very large air reserves. Even without recycling, oxygen demands by an adult human are relatively light in terms of mass. If you take care to scrub the air, an adult needs only about two kilograms of oxygen per day. The many tons of air needed just to fill a typical DropShip carry enough oxygen to last a long time—a *Union* alone has more than fifty tons of oxygen in its open spaces. Without scrubbers, though, carbon dioxide levels can reach a toxic point long before the oxygen runs low. Fortunately, carbon dioxide scrubbing is a pretty simple technology. Some alkaline hydroxide compounds make a quick backup for the fancier thermal or molecular traps and dioxide crackers of modern ships.

Humans exhale a lot besides carbon dioxide. Humans exhale about as much water as CO_2, kilograms of it, as a result of your metabolism—not all the byproducts of your digested food come out your rear end. Water, humidity, is easy to capture, but the trace chemicals humans emit can get annoying and complicate air processing.

Ships generally have a centralized, fancy air treatment system that cleans out unwanted chemicals, keeps the oxygen and nitrogen in balance, maintains pressure at the desired level, "cracks" water and carbon dioxide back into more useful chemicals, controls temperature and performs other complicated tricks of air processing. However, secondary systems include local emergency oxygen supplies and scrubbing packs throughout corridors and major compartments. I've heard some passenger liners make a point of including closed emergency life support in their luxury passenger compartments, just to sell tickets with that added measure of safety.

Fighters tend to be the exception to this rule. Mass is at a premium on aerospace fighters, so the cockpits generally only include some "canned" oxygen and a scrubber, with no real recycling—which would only be slightly heavier, given the abundance of power available from the fusion engine. The typical fighter life support system is only meant to last about 96 hours, including

oxygen and some drinking water, though most fighters can install extra oxygen tanks. A few liters of liquid oxygen will last a long time when the pilot is only breathing about two kilos a day, and it's not like fighters are short of internal space when they're stuffed full of tons of liquid hydrogen. Though it's feasible to put pilots in some fighters for a week or more, that sometimes takes special training or at least substantial hardship pay. Fighter cockpits are rarely as comfortable as the largest BattleMech cockpits.

Despite the many redundant systems and robust hulls of their spacecraft, spacers—especially engineers and technicians—wear uniforms that can double as spacesuits in a pinch. The wiser and trimmer spacers wear "skinsuits," perhaps under general duty overalls, that maintain satisfactory pressure with the elastic material of the suit, which allows pretty good mobility in a vacuum. The alternative for decent mobility in an emergency is full suits with "constant volume joints." Simply inflated spacesuits would bend unevenly at joints, meaning the spacer would fight against the internal pressurization of the suit to bend a limb, perhaps requiring more than a thousand Newtons of force, so spacesuits are designed with articulated joints that keep the joint volumes constant. As an emergency feature, most large spacecraft carry plentiful emergency spacesuits. These lightweight garments have awful vacuum mobility because they lack proper constant-volume joints—they inflate like star-shaped balloons in a hard vacuum—and only give about 30 minutes of air without external aid, but that should be enough to reach a lifeboat or pressurized compartment.

On that note, most large spacecraft are heavily compartmentalized. Modern construction materials allow most walls and doors to hold pressure, even little crew cabins. They aren't proper airlocks, but the many airtight compartments allow excellent damage containment, and most of it is automated to some degree. Generally, alarms will sound when slow leaks are detected, giving local compartment occupants time to evacuate or plug the leak. In sudden decompressions, such as those due to battle damage, damage control computers snap shut doors automatically. Assuming the doors weren't already shut for battle.

Ships generally do not depressurize for battle, though some captains may do so deliberately. While air pressure can transmit shocks and support fires, it also allows the ship to act as a "spacesuit" for the crew. Compartments that decompress before crew inside them can react are generally compartments filled with dead crew, so keeping the ship pressurized is an extra measure of safety—particularly if damage that got through the hull holed spacesuits. Damage control computers can always depressurize volumes with fires or boarders or chemical spills; you don't have to proactively vent the whole ship for problems that are likely to be localized. And while captains may keep ships pressurized, they generally demand their crews suit up anyway, with helmets and gloves tethered if not worn.

While I'm on the topic, firefighting is important in an enclosed environment like a spacecraft. Obviously, it endangers the air supplies by consuming oxygen and producing toxic smoke, but fire also causes less obvious problems on a spacecraft. Pressure increases, for one. If you recall, heated gases want to expand, and if they cannot expand, then their pressure goes up. Raising a compartment's temperature by about three hundred Celsius will double air pressure. That sort of problem, combined with heated walls, can produce buckling and bursting of bulkheads, not to mention difficulty opening hatches due to pressure differences. Firefighting is usually accomplished first by ultra-fine water mist extinguishers that help control the temperature, then inert gases that have the drawback of smothering unprotected compartment occupants, and finally venting compartments to vacuum. Handheld extinguishers and damage control are used to attack fire sources, so crew training involves more than just pushing buttons to vent compartments.

Temperature

When it comes to temperature control, most spacecraft actually have to cool their interiors despite the supposed cold of space. (I shouldn't have to tell you that cold is an illusion—only substances are cold, and space is the absence of substance.) Spacecraft are designed with heavy insulation so they are not affected by the sharp exterior temperature extremes. However, insulation works both ways. The human crew of a typical DropShip can keep the crew spaces fairly warm with their own body heat, to the point that cramped crew facilities can have overheating problems. Cooling generally depends on the spacecraft's heat sink network or similar heat pumps dedicated to the life support system.

Modern climate control on spacecraft is usually able to handle most reasonable extremes of temperatures, from those of typical inner planets of a system to the depths of interstellar space. External cold is always easier to handle than heat—heating is easy on heavily insulated, fusion-powered spacecraft.

Water

A sufficient supply of clean water is necessary for any long-range voyage. Humans use a lot of water every day for drinking, food preparation and hygiene. A typical large craft's water system budgets about 500 liters of water per crewmember and passenger per day. It isn't feasible to meet those demands—half a ton per day per person—with just stored water, so filtration and recycling are necessary. Water may be reused on spacecraft hundreds of times. Spacecraft use a variety of recycling and filtration techniques. An old standby is a set of filters and supercritical water oxidation, which breaks down virtually anything with superhot, oxygenated water—metal, plastics, soaps, organic waste and so on—into water, carbon dioxide and some ash. Newer ships rely on a variety of fancier processing systems that avoid tanks of pressurized, superheated water. Fighters basically have no water recycling, relying on small holding tanks.

Interestingly, a sizable source of "fresh water" on spacecraft is human exhalations. I mentioned this earlier. Each kilogram of food—measured by its dehydrated mass—that you consume produces about a liter of water as inhaled oxygen is combined with the food in your cells.

Losses in the water recycling system accumulate in the "sludge tanks." This unrecyclable waste is generally packaged in injection-molded plastic bins made on the ship—often made out of some of the waste solids that could not be recycled, or re-melted plastic food containers—and ejected from the ship into its drive plume. The few ships that have hydroponics have alternate uses for that sludge. As they say on *Invaders*, "Flush twice, it's a long way to the gardens."

PSYCHOLOGICAL CONSIDERATIONS

Yet another topic change: keeping the crew sane. I borrowed this from a lecture I did a few weeks ago for Dr. Readly's other transportation tech class section…

A modern large spacecraft is…well, large. Many urbanites on advanced worlds in the Inner Sphere voluntarily lock themselves into apartments much smaller than the volume available to spacecraft crewmen, especially the under-crewed, oversized WarShips and JumpShips, and only contact the outside world through the wonders of telecommunications. Telecommuting, online food and goods ordering, direct-to-door services—yes, we can create and live in our little enclosed worlds and be perfectly happy. So why do so many spacers have trouble doing the same in roomier spacecraft?

I suppose the key word is "our" little enclosed worlds. When you turn into a shut-in, you're going into your own safe little place. And if you need to get out once in awhile, you can always open the door and go out. A spacer is locked in a tin can with people he or she cannot avoid, duties that cannot be shirked, long hours, isolation from the outside world—there are no real-time computer nets in deep space—and grinding routine.

Isolation and Routine

Shipboard life is prone to considerable tedium, since it lacks easy access to the outside universe. You don't have the stimulation of weather, wide-ranging social interactions, or even telecommunications that let you into chats and live games. For vulnerable personnel, it's not unknown to see individuals slipping into their own fantasy worlds and even deciding the outside universe is an illusion.

Phobias

Spacecraft manage to encourage a number of phobias. The primary phobias are two opposite conditions: claustrophobia and agoraphobia, the fears of enclosed spaces and open spaces, respectively.

The enclosed nature of spacecraft, even large WarShips, and restrictive shipboard lifestyles can prompt an outbreak of claustrophobia even among pre-screened, iron-willed crewmembers. Passengers are even more vulnerable, since they are rarely screened.

On the other hand, crewmembers and passengers may become used to the closed confines of spacecraft. Sometimes the thought of all that darn *space* lurking outside the hull might bother a spacer but veteran spacers are rarely troubled by deep space. After all, there's nothing to give perspective and depth to most of it. Stars are simply specks of light on some unknowably distant background, and few other objects exist to give space any *scale*. Fighter pilots who eject sometimes suffer agoraphobia from the depths of space, but they're also suffering from the terrible worry that they might not be rescued and be left to drift alone. So, actually, agoraphobia tends to hit spacers on the ground, where suddenly there's way too much perspective. Even the cramped confines of an urban jungle can appear overwhelmingly vast to a spacer.

I've always thought that the recycling aspects of life support systems would drive a germ-o-phobe—is that the right term?—nuts, but I haven't heard of many problems with that.

General Tensions

When you're stuck in a small tin can for weeks and months at a time and have no chance to escape, little things can matter a lot. A critical comment or imagined slight you and I can walk away from may seem inescapable on a DropShip or JumpShip. Ship captains take a lot of care to weed out problematic crew before starting a long voyage and seek recruits with good self-discipline, but once a voyage begins it takes good care and personnel management to avoid problems. If you don't avoid the problems, you can get explosions a lot worse than they would be on the ground. That fistfight on Salyut-8 and knifing on Crippen Station are perfect examples of crewmembers buckling under stress.

For better or worse, the long-serving crews of large craft often see some romance among crewmates. While this might seem like a great safety valve, particularly to a crowd as young as you, romance among co-workers is often begging for disaster. A romance fostered under unnecessarily confined conditions is one that might never have worked otherwise and when it goes bad…well, then you're stuck on a ship with an unhappy ex. Even when it goes well, there can be problems—you just don't think straight about lovers, and that's dangerous for a spacer. There have been various approaches to dealing with this over the centuries. Most commercial lines and military ships strongly frown on fraternizing between different ranks, and sometimes even in the same sub-section of the crew. The family-run JumpShips of the late Succession Wars and modern era have figured out their means of keeping work and love separate and worked it into their culture. The Clans manage to mostly raise their people to separate romance and sex, so their crews can "clear their heads" without making things worse. Some of the pre-Confederation nations in Capellan space and Free Worlds member states used, well, "ship's whores" in the 24th and 25th centuries for deliberate crew morale purposes.

SYSTEM TRANSIT

And from crazy spacers we shift to interplanetary transit. That makes sense, Dr. Readly. But I've got just the clip to plug in…

The groundbreaking work of the TAS *Columbia* demonstrated the power of fusion rocketry. The *Columbia* was originally built as the fourth *Altair*-class interplanetary ship. The *Altair*s had been making six-month journeys to Mars, Terra's outer neighboring planet, using brief bursts of chemical rockets to reach Mars at its biannual closest approach to Terra of half an AU. When the *Columbia* was refitted with a GM FP-100D fusion rocket, its demonstration voyage in 2027 C.E. was accomplished in fourteen days at a constant tenth of a gravity of acceleration. Even as the *Columbia* set its record, its giant, unmanned descendants were taking form at Crippen Station: the Magellan probes. These were the largest self-propelled spacecraft built up to that time, more than 300 meters long, and their next-generation FP-2000XE fusion engines would allow them to accelerate at 2 Gs for months on end, eventually reaching 68 percent of light-speed.

Ten and a half centuries later, our fusion engines still propel us through star systems at 1 G for our health and convenience. Improvements have mostly been in the form of engine efficiency and mass, and peak size—as the Federated Commonwealth learned with the *Fox*, it takes some doing to build large fusion rockets, sometimes more than designing a compact K-F drive.

There are two general approaches to system transit: constant acceleration or the inertial-coast method. Constant acceleration picks an acceleration and uses it from start to halfway through the voyage. At the halfway point, the ship cuts its drive briefly, flips 180 degrees so its engines are now facing in the direction it's heading, and then runs the engines at the same acceleration for the last half of the voyage. As a result, the ship ends up at its destination halted and with the crew and passengers happy that they experienced "gravity" for the whole trip.

To minimize fuel use or remain stealthy, some ships use the "inertial-coast" method. This involves the ship accelerating for a while, then cutting its engine to coast for most of the voyage until making an equal braking burn at the destination. Depending on how long and powerful the engine burns are, inertial-coasting can deliver trips almost as short as constant acceleration voyages, or it can take months, as was the case of the *Altair*s on their six-month jaunts to nearby Mars.

How fast will 1 G, or some other constant acceleration and braking, get you through a system? That takes a little algebra, the distance and the acceleration you're interested in. The transit time is up here on the board…

Time = 2 x square root (Distance / Acceleration)

For you art and humanities types, you can't weasel out with easy numbers or approximations. In that equation, Time is the total transit time in seconds, Distance is the total transit length in meters, and Acceleration is in meters per second per second. For those of you looking a bit confused, remember there are 3,600 seconds in an hour and 24 hours in a day; that one kilometer equals 1,000 meters, and that there are about 500 million kilometers in an astronomical unit; and that 1 G is 9.8 m/s/s. Keep your units straight and you should get the correct numbers. Some common examples of trips at 1 G include (yes, I'm rounding):

- *2 hours, 10 minutes for a 150,000km journey to a typical moon*
- *7 hours for a 1,500,000km journey to the L1 Lagrange point of a typical habitable planet and its typical star*
- *49 hours for a 75 million-kilometer journey between a typical habitable planet and a typical neighboring planet*
- *69 hours for a 1AU journey*
- *218 hours for a 10AU journey, such as from Terra to its standard jump point*

Earlier, I pointed out that transit times don't shrink directly with increasing acceleration. For example, 2 Gs does not halve transit time. From that equation, it should be clear why. Transit time goes down with the square root of acceleration. It also shows why doubling distance only increases transit times by about 41%. So, how about looking at those six example 1 G flights at 1.5 G or 2 Gs or 4 Gs? Well, first, take the square root of the new acceleration as a fraction of the old (in this case, the square root of 1.5, or square root of 2, or square root of 4), then divide the 1 G trip time by that square root.

- *150,000km journey to a typical moon: 106 minutes at 1.5 Gs, 92 minutes at 2 Gs, and 65 minutes at 4 Gs*
- *1,500,000km journey: 5 hours, 42 minutes; 4 hours, 57 minutes; and 3 hours, 3 minutes*
- *75 million kilometers: 40.5 hours; 34.6 hours; and 24.5 hours*
- *1AU journey: 56 hours; 49 hours; and 35 hours*
- *10AU journey: 178 hours; 154 hours; and 109 hours*

Another question you might ask is, "How much distance is covered by a trip of known length and acceleration?" Interstellar passenger lines tend to post their schedules in terms of days spent at the standard 1 G and many planetary overviews tend to list "transit times" from jump points to planets, not "transit distances." Well, if you're curious, it goes like this for constant acceleration flights:

Distance = 0.25 x Acceleration x Time^2

Again, Distance, the total distance covered, is in meters; Acceleration is in meters per second per second; and Time, the total transit time, is in seconds. For those of you remembering your basic physics who are about to ask why there's a 0.25 instead of 0.5 in there, put your hands down. The equation does not give the distance covered by constant acceleration in one direction. Instead, it gives the distance covered by a ship that burns in one direction half the time, then uses a braking burn for the rest of the time.

How might you use that equation? Well, I'm not saying this will be on one of Dr. Readly's exams, but you might want to pay real good attention to the following question: considering the transit time of Terra to its standard jump points, why are the Titan Shipyards of Terra—or I should say, the Titan Shipyards of Saturn, Sol VI—so perfectly placed for JumpShip testing and production? Chew on that tonight.

Inertial-coast transit calculations are more complicated because, well, it depends on how long you burn, how long you coast and quite possibly other factors. I suggest taking a course in interplanetary navigation if you're really curious. A freshman physics course should get you through the simpler scenarios.

Speaking of scenarios, you might wonder about trajectories and flight paths and gravity assists—sling shots—and all the other concerns that make eyes bleed and brains melt in navigation courses. Fortunately for laymen, the basics of interplanetary navigation with fusion rockets are quite simple: it's a straight line. Acceleration is so high and so prolonged that you can do perfectly adequate back-of-the-envelope calculations assuming straight-line flights. It's only when you slow down enough to enter a planetary orbit that the math starts getting complicated. Sling shots, which depend on lingering around a planet or moon for gravitational boosts or braking, are virtually irrelevant to today's flight. When you buzz past a big gas giant in your 1 G DropShip, you're not going to be near the planet long enough to significantly boost or hinder your flight. Oh, actual navigators have to worry about the gravitational effects, but that's only because they're trying to get their ships to arrive within a kilometer or two of an aim point. For Dr. Readly's course, you don't need to worry about it.

…and that's it. I think Dr. Readly was dumping all the transtech topics he skipped into this lecture, but watch for them. They'll be on the exam.



The Ghosts of the Black Watch reap a terrible vengeance against the Word of Blake invaders on the world of Dieron.

The *BattleForce: Standard Rules* (see p. 212) are a simplified, fast-playing system for resolving combat between large Forces. The advanced rules build on that framework, providing multiple options to enhance the standard game. As with everything, the added complexity also means increased playing time and the potential for player adjudication. While all of these advanced rules are technically optional, *BattleForce: Advanced Rules* is designed with a core set of rules suitable for most games. All of the rules in this section are considered core rules unless specifically noted as optional. The optional rules mostly focus on a variety of special situations, though some present alternative methods for resolving situations already covered in the core rules. Prior to beginning play, players should agree on which optional advanced rules are appropriate for their game.

ORGANIZATION OF RULES

BattleForce: Advanced Rules follows the same format as *BattleForce*: *Standard Rules*. A brief look at the sequence of play opens the section, followed by a detailed examination of each phase. Rules for a variety of new Element types follow, and the section wraps up with numerous special-case rules.

RULES LEVEL

BattleForce: *Advanced Rules* uses advanced rules as described on page 10 of *Total Warfare*. These rules are not appropriate for tournament play.

ADVANCED GAME TERMS

BattleForce: *Advanced Rules* introduces several new concepts and terms to the *BattleForce* system. Each is briefly summarized here and explained in detail in the appropriate sections.

Blip Counters

Blips add a fog-of-war aspect to *BattleForce* by concealing the identity of opposing Forces until they have been revealed through reconnaissance (see *Battlefield Intelligence*, p. 263).

Chain of Command

The Chain of Command is a representation of how commands move from a Force's commander (the controlling player) to individual Elements (see *Building the Chain of Command*, p. 300).

Command Counters

Each command is represented by a numbered counter. The counters use numbers rather than the name of the command so that they can be easily changed from game to game (see *Counters*, p. 261).

Command List

This numbered list establishes which command is associated with each command counter. Each faction has its own command list, and players are encouraged to develop command lists (see *Choosing Command Lists*, p. 302, and *Designing Command Lists*, p. 302).

Command Origin
The point at which commands originate on the Chain of Command diagram (usually Headquarters).

Command Points
Players use Command Points to draw, move and discard commands; issue, move and discard requests for commands; and split and re-form Units (see *Command Phase*, p. 265).

Command Pool
Command counters are kept in the Command Pool unless they are assigned to a Unit, or moving along the Chain of Command. Generally, it's a good idea to collect these counters in a cup or other convenient container (see *Setting Up*, p. 242). Each regiment, Galaxy, and Level IV has its own Command Pool. Depending upon the size for Forces in play, Command Pools may be comprised of multiple Command Lists.

Command Unit
A command Unit is any Unit responsible for relaying commands (see *Command Units*, p. 301).

Commands
Commands depict a shrewd leader's battlefield genius as he directs his Forces. They provide a Unit with temporary special abilities (see *Command Phase*, p. 265).

Field Commander
The command Unit with the highest Tier of command or Unit selected when there is a tie for the highest Tier.

Headquarters (HQ)
Headquarters act as the nerve center of any large-scale military action. They are the normal starting (or ending) point for commands and requests for commands during game play (see *Counters,* at right, *Headquarters*, p. 301 and *Command Phase*, p. 265).

Leader Special Ability
Some Elements have this ability, which allows them to generate Command Points (see *Leader (LEAD)*, p. 350).

Morale
Morale determines whether a damaged Unit will stay in the fight or withdraw (see *Morale*, p. 295).

Objectives
Battles are always fought for something. Offensive objectives represent a tangible asset to be acquired or destroyed during game play. Defensive objectives are assets that a player's Force attempts to protect during game play (see *Objectives,* p. 243).

Request Counter
This numbered counter moves up the Chain of Command to acquire a predetermined command (see *Counters*, at right).

Request for Command
This term describes the process of placing a Request Counter in the Chain of Command (see *Command Phase*, p. 265).

Request Pool
The Request Pool is a holding area for Request Counters not currently in use (see *Command Phase*, p. 265).

Subordinate Unit
Any Unit that reports to another Unit in the Chain of Command is considered subordinate. A command Unit may be a subordinate as well (see *Building the Chain of Command*, p. 300).

Superior Unit
A Unit above another Unit in the Chain of Command is considered a superior Unit (see *Building the Chain of Command*, p. 300).

COMPONENTS

BattleForce: Advanced Rules uses the same components as *BattleForce*: *Standard Rules*, and includes several new types of Elements from *Tactical Operations* as well as some of the advanced Elements presented elsewhere in this book. Most Units described in *Total Warfare*, *Tactical Operations* and elsewhere in *Strategic Operations* can be converted for use in *BattleForce*. A complete list of Elements with *BattleForce* stats may be found in the BattleForce Master Unit List at www.classicbattletech.com.

RECORD SHEETS

There are two principal types of record sheets in *BattleForce: Advanced Rules*. Single-Element Record Sheets and Multi-Element Record Sheets. A Single-Element Record Sheet represents a single (usually large) Element in the game, such as a WarShip. A Multi-Element Record Sheet represents an amalgamation of several smaller Elements into one large Element for playability. An example of this is an aerospace fighter squadron. Refer to p. 214 of *BattleForce: Standard Rules* for a description of the record sheets. *BattleForce: Advanced Rules* introduces the following new record sheets:

- Large/Very Large/Super Large Support Elements
- Satellites/Space Stations/JumpShips
- Mobile Structures
- WarShips
- Squadrons

COUNTERS

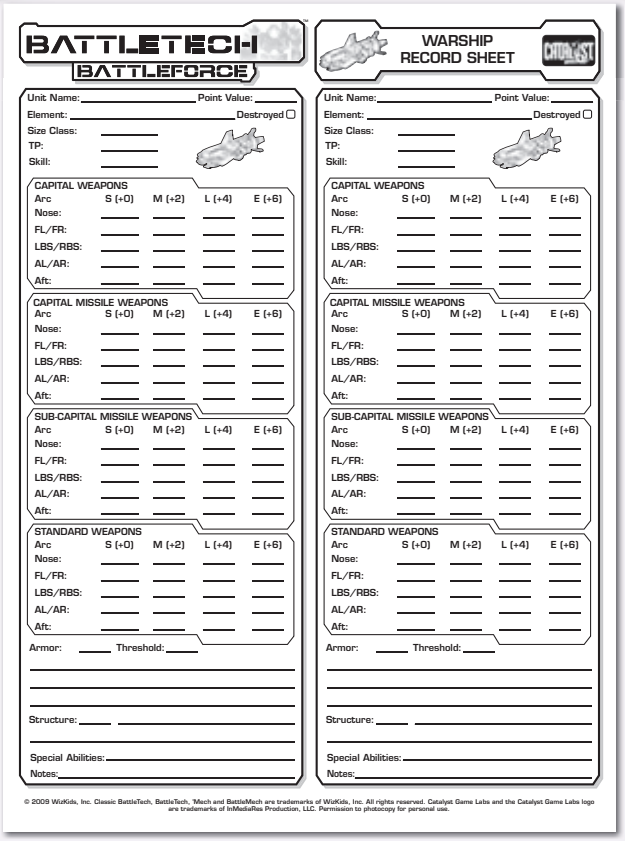
In addition to miniatures, *BattleForce* uses five different types of counters. Three types of counters—blip, objective and headquarters—are placed on the map. The other two types—command and request—are used on the Chain of Command diagram. Each counter is pictured and described below.

Blip Counters



A blip counter represents an unidentified Unit on the battlefield. Each counter has a line for writing in a unique numeric identifier corresponding to a particular Unit in the Force. There are two styles of blip counters to easily identify different Forces on the battlefield.

Command Counters
There are a total of 10 command counters. The front of all


BATTLETECH
BATTLEFORCE
WARSHIP RECORD SHEET
CATALYST game labs

Unit Name: Point Value:
Element: Destroyed
Size Class:
TP:
Skill:

CAPITAL WEAPONS
SUB-CAPITAL MISSILE WEAPONS
STANDARD WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

Armor: Threshold:
Structure:
Special Abilities:
Notes:

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• BATTLEFORCE SINGLE-ELEMENT RECORD SHEET •

BATTLETECH
BATTLEFORCE
SQUADRON RECORD SHEET
CATALYST game labs

Unit Name: Point Value:
Skill:
SQUADRON ATTACK VALUES

DROPSHIP/SMALL CRAFT STANDARD WEAPONS
DROPSHIP/SMALL CRAFT CAPITAL MISSILE WEAPONS
DROPSHIP/SMALL CRAFT SUB-CAPITAL WEAPONS

	6	5	4	3	2	1
Short (+0)						
Nose						
Wing						
Side						
Aft						
Medium (+2)						
Nose						
Wing						
Side						
Aft						
Long (+4)						
Nose						
Wing						
Side						
Aft						
Extreme (+6)						
Nose						
Wing						
Side						
Aft						

FIGHTER SQUADRON

Fighter	TP	Armor/Structure

Damage By Number Successful

Range	6	5	4	3	2	1
Short (+0)						
Medium (+2)						
Long (+4)						
Extreme (+6)						

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• BATTLEFORCE MULTIPLE-ELEMENT RECORD SHEET •

command counters are identical. This allows the commands to be moved on the Chain of Command diagram while keeping their effects secret. On the back on each command counter, players should write the command list name, a hyphen or dash and the command number, e.g. "Alpha-1" or "Alpha/1." Numbering the commands allows their meaning to change between games, rather than always providing a fixed meaning. Players must have 10 commands for each command list.



Headquarters Counter

The headquarters counter is placed on the map to represent a Force's tactical nerve center. The opposing player's headquarters is an offensive objective for each player, and capturing it hampers a player's ability to issue and move commands.



A player's Elements are never assigned to the headquarters. All senior command staff assigned to headquarters are included (without charge) as part of a player's Force and are represented by this counter (never Elements) in *BattleForce*. Although many commands function with commanding officers "in the saddle," most *BattleForce* games assume a traditional headquarters is available.

Objective Counters

Objective counters represent any tangible, physical asset. The exact nature of an objective is limited only to the players' imaginations.



In a standard game, a total of four objective counters are placed on the map, two for each player.

Request Counters



As with commands, the front of all request counters are identical. This allows the requests to be moved on the Chain of Command diagram while keeping their effects secret. On the back on each request counter, players should write the command list name, a hyphen or dash and the command number, e.g. "Alpha-1" or "Alpha/1." Each player must have a set of numbered request counters corresponding to every command on each command list in their command pool.

PLAYING THE GAME

This section provides an overview of the turn sequence for advanced *BattleForce*. These rules assume that there are two sides in each game, either two players or two teams of players. Wherever the rules refer to a player, that term can mean a team of players as well as an individual.

A *BattleForce* game consists of a series of turns. During each turn, all Units on the map have an opportunity to move and fire their weapons or make physical attacks. Each turn consists of several smaller segments of time, called phases. During each phase, players may take one type of action, such as movement or combat. The players execute the phases in a given order. Specific actions, movement, effects of damage and so on are fully explained in separate sections later in these rules.

Each turn includes the following phases, performed in the following order:

1. Initiative
2a. Initiative Loser Command Phase
2b. Initiative Winner Command Phase
3a. Initiative Loser Ground Movement Phase
3b. Initiative Winner Ground Movement Phase
4a. Initiative Loser Aerospace Atmospheric Movement Phase
4b. Initiative Winner Aerospace Atmospheric Movement Phase
5a. Initiative Loser Aerospace Space Movement Phase
5b. Initiative Winner Aerospace Space Movement Phase
6a. Initiative Winner Combat Phase
6b. Initiative Loser Combat Phase
7. End Phase

INITIATIVE PHASE

Each player rolls 2D6 and adds the results together to determine Initiative; re-roll ties. The player with the higher result is the Initiative Winner. The other player is the Initiative Loser for this turn.

COMMAND PHASE (OPTIONAL)

The Initiative Loser completes all actions in this phase, followed by the Initiative Winner.

The acting players spend Command Points, move commands, issue requests for commands, plot orbit-to-surface attack and artillery strikes, and so on.

GROUND MOVEMENT PHASE

The Initiative Loser completes all actions in this phase, followed by the Initiative Winner.

The acting player moves all of his ground Units. Ground Units, as defined in *Total Warfare* (see p. 20), include hovercraft, Naval Vessels, tracked vehicles, VTOLs, wheeled vehicles and WiGEs.

AEROSPACE ATMOSPHERIC MOVEMENT PHASE

The Initiative Loser completes all actions in this phase, followed by the Initiative Winner.

The acting player moves all of his aerospace Units that are operating in the atmosphere. Aerospace Units, as defined in *Total Warfare* (see p. 20), include aerospace and conventional fighters, Airships, DropShips, Fixed-Wing Support Elements and Small Craft.

AEROSPACE SPACE MOVEMENT PHASE

The Initiative Loser completes all actions in this phase, followed by the Initiative Winner.

The acting player moves all of his aerospace Units that are operating in space. Space-capable aerospace Units, as defined in *Total Warfare* (see p. 20), include aerospace fighters, DropShips and Small Craft. *BattleForce: Advanced Rules* adds JumpShips, Satellites, Space Stations and WarShips to this list.

COMBAT PHASE

The Initiative Winner completes all actions in this phase, followed by the Initiative Loser.

The acting player declares targets for all of his Elements and then resolves combat. Each surviving Element of each Unit may make one attack. Damage from these attacks is resolved as each Element finishes its attacks, but does not take effect until the End Phase; this means a destroyed Element will normally have a chance to return fire.

END PHASE

Both players may complete this phase simultaneously.

Each player executes any miscellaneous actions remaining in the turn, such as morale checks, removing eliminated Elements, detaching DWPs and reorganizing Units. The specific rules for such actions state whether or not they take place during the End Phase. For example, Elements that began a turn shut down from overheating restart in the End Phase, with their heat levels reduced to zero.

Players repeat all these steps until one team meets its victory conditions for the scenario.

INITIATIVE PHASE

The following section describes the rules governing Initiative.

INITIATIVE MODIFIERS

Several Elements mount extensive communications or sensor packages. When used properly, this equipment can provide a commander with valuable battlefield insight. Conversely, some battlefield events can negatively affect a Force's ability to fight. The Initiative Modifiers Table (see p. 264) summarizes these effects.

Modifiers for each category are cumulative. However, the modifiers within a category are not—only the best (or worst) modifier is applied from each category. For example, if a Force occupies one objective and captures another during the same turn, only a +2 bonus is received, not a +3 (+2 for occupation *and* +1 for capture). For a more detailed version of this system, see *Battlefield Intelligence,* below.

BATTLEFIELD INTELLIGENCE (OPTIONAL)

Often the key to winning or losing an engagement lies in the hands of a bunch of sweat-soaked soldiers hunched over a computer terminal trying to make sense of multiple intelligence feeds, garbled transmissions and sketchy reports from nervous junior officers. Amid the veritable jungle of poor information, these officers search relentlessly for a few gems of usable intelligence—news that, at the right time, will turn the tide of battle in their favor. Of course, once those gems are identified, the information still has to make its way into the hands of a competent leader, or it's as useful as a knife in a 'Mech fight.

Battlefield Intelligence is an optional rule for *BattleForce* that attempts to quantify this and put it into a practical framework, through the uses and rules described below.

Battlefield Intelligence Ratio

The effect of battlefield intelligence depends on the rating of each Force and the ratio of the difference in those ratings. To determine the Battlefield Intelligence Rating (BIR) for a Force, add up points as shown on the Battlefield Intelligence Table.

INITIATIVE MODIFIERS TABLE

Special Ability	Modifier
MHQ3	+1
MHQ3 + 4 or More Elements with Recon	+2
MHQ7	+2
MHQ7 + 4 or More Elements with Recon	+4

Battlefield Modifier	Modifier
Objective Occupied	+1*
Objective Captured	+2*
Opponent's Tier Four Command Unit Destroyed	+2*
Opponent's Tier Three Command Unit Destroyed	+1*

Leadership Modifiers	Modifier
Field Commander	+Tier†

Force Status Modifiers	Penalty
≥ 50% of Forces Broken	–1
≥ 50% of Forces Routed	–2
≥ 50% of Forces Destroyed	–3
Force Has No Elements With Recon	–1
Headquarters Occupied	–2‡
Headquarters Captured	–4‡

*Applies to the following turn only.
†Unit must have at least one functional Element. Points are awarded for the highest tier of command only.
‡Applies to the Headquarters Counter only, not Mobile Headquarters (MHQ).

BATTLEFIELD INTELLIGENCE TABLE

Battlefield Intelligence Rating	
Points	Item
2	Each ground Element with the Recon special ability
1	Each non-DropShip aerospace Unit
2	Each non-DropShip aerospace Unit with the Recon special ability
2	Each DropShip
5	Each Satellite Element with the Recon special ability
1	Each point of MHQ special ability

To determine the ratio, divide the larger rating by the smaller and round normally to the next whole number. The result is the ratio of the smaller BIR to the larger BIR. If either Force has a rating of zero, treat the other Force as having a rating of 1, and a ratio of 0:1.

If the ratio is 1:1 no special bonuses are granted. For any other result, the number on the left represents the Force with the lower BIR, the number on the right the Force with the higher BIR. The Force with the higher rating gets multiple bonuses (see below). Most bonuses are based on the number on the right side of the ratio. This ratio is recalculated during the End Phase of any turn in which either Force loses an Element that affects its BIR and may change the bonuses applied in the following turn.

Each player must reveal his Force's Battlefield Intelligence Rating, but players are not required to provide a detailed breakdown of points until the end of the game.

Knowledge of the Area

These rules replace the standard rules for setting up (see p. 242). Each player makes an unmodified 2D6 Initiative roll. The player with the higher total is the Initiative Winner. The other player is the Initiative Loser. The Initiative Winner picks the scenario to be played.

If the battlefield intelligence ratio is 1:1, each player should evenly participate in picking mapsheets or preparing terrain. If the ratio is 0:1 the player controlling the Force with the higher BIR sets up the entire battlefield. Players can choose to randomly generate maps in this situation.

If the ratio is anything else, for every mapsheet selected (or terrain feature added) by the Force with the smaller BIR, the Force with the larger BIR should select a number of mapsheets equal to that rating (or add or remove that many terrain features). If the players are randomly generating terrain, the Force with the larger rating should select 1 map out of every X maps placed, where X is the number on the right side of the ratio.

The Force with the larger BIR also chooses its home map edge (and deployment zone) first. Additionally, if permitted by the type of scenario, the Force with the larger rating may start play with a number of Units hidden anywhere except in their opponent's deployment zone. To determine the number of Units that may be hidden, divide the total number of Elements in the Force by the number of Elements with the Recon (RCN) special ability (see p. 352) and round normally to the next whole number. The resulting ratio is the number of Units that may be hidden, up to a maximum of half the Force. The full number of unhidden Units indicated by the ratio must be placed in the deployment zone (or enter the map on Turn 1) for each hidden Unit.

Initiative Bonus

These rules replace the special ability modifiers in the advanced rules for the Initiative Phase (above). Each player rolls 2D6 for Initiative, applying the modifiers shown on the Initiative Modifiers Table. Instead of the special ability modifiers, the number on the right of the battlefield intelligence ratio is applied as a positive modifier for the Force with the higher rating.

Leadership Bonus

A good leader can snatch victory from defeat. Their skills are legendary and legions of soldiers stand ready to follow them into glory. To symbolize this, the leadership bonus grants the Force with the higher BIR the number on the right of the ratio in additional Command Points each turn.

An additional bonus applies only to the Force with the higher BIR at the start of play. A number of times per game equal to the number on the right of the BIR ratio, this Force may require a re-roll of Initiative by either or both player(s). If the opposing Force gains a higher BIR through the course of play, it has no effect on this ability.

Tom and Eric are preparing for a game. Tom won the Initiative roll and chose a Standup Fight for the scenario. Each has a battalion-size Force.

Tom's Force includes 2 Raven-*3Ls and 2* Men Shen-*0s. Looking at the Battlefield Intelligence Table, Tom has a total of 8 battlefield intelligence points (2 points for each of his 4 Elements with Recon).*

Eric has 3 Stealth-*1Ds, 2* Strider-*Os and a pair of* Boomerang *spotter planes. Eric's Force has 12 battlefield intelligence points.*

Dividing 12 by 8 equals 1.50, which rounds up to 2, giving a ratio of 1:2. Eric will choose 2 mapsheets for every 1 that Tom chooses. Eric also gets to choose his home map edge and deployment zone. Since the scenario does not prohibit hidden Units, Eric will also get to hide some of his Units. Eric has 40 Elements total. Dividing this by the 7 Recon Elements in his Force, Eric gets a result of 5.71, which rounds up to 6. Eric can hide 1 Unit for every 6 that walk on the field. As Eric only has 10 Units in his Force, he will only be able to hide 1 Unit. If Eric had 14 Units in his Force, he would be able to hide 2 of them.

Additionally, Eric gets 2 extra command points per turn plus an additional +2 Initiative bonus, and may request an Initiative re-roll 2 times during the game.

COMMAND PHASE (OPTIONAL)

Commands represent the ability of skilled field commanders to get better than standard performance out of their troops. A little extra movement or firepower at the right moment often can mean the difference between victory and defeat. It is up to the player to skillfully issue commands to the right Units at the right time to maximize their usefulness and potential.

Commands are represented by numbered command counters corresponding to a numbered entry on a Command List (see *Choosing Command Lists*, p. 302). The counters are numbered rather than given specific names so that the effects of these counters can change from scenario to scenario, as each army and situation dictates a different style of command. Players randomly draw (or roll for) commands from the Command Pool. Requests for commands are also represented by ten numbered counters corresponding to a value on a Command List though they need not be drawn or used in a random fashion. Each regiment, Galaxy, and Level IV has its own Command Pool (and headquarters counter) which usually contains several command lists.

Military organization, command lists and command descriptions are found in the *Commands* (*Optional*; see p. 298).

COMMAND POINTS

Each Element with the Leader (LEAD) special ability (see p. 350) generates Command Points equal to its tier of command each turn. If an Element occupies multiple tiers of command, it only generates points for the highest tier it occupies. This represents the additional strain of double duty. The Force also receives 7 Command Points as long as it has a Headquarters counter in play. An occupied headquarters provides 3 Command Points. A captured headquarters provides zero Command Points. The Standard Command Points Table lists Command Points available for "typical" Formations by faction.

Support Elements with the Leader (LEAD) special ability generate 1 Command Point per turn regardless of their tier. Destroyed Elements do not generate Command Points.

No matter how many Command Points a Force has available, it may not expend more points in a single turn than double the amount it can currently generate. For example, an Inner Sphere Regiment (with Headquarters) generates 58 Command Points per turn. It may not expend more than 116 Command Points in a single turn. Command Points not banked are lost during the End Phase of each turn (see *Bank Command Points*, 268).

STANDARD COMMAND POINTS TABLE

Typical Formation*	Points Available Without HQ	Points Available With HQ
Inner Sphere/Periphery Company	4	11
Inner Sphere/Periphery Battalion	15	22
Inner Sphere/Periphery Regiment	51	58
Clan Trinary	4	11
Clan Cluster	13	20
Clan Galaxy	40	47
ComStar/WoB Level II	1	8
ComStar/WoB Level III	8	15
ComStar/WoB Level IV	49	56

*Without Transport & Support

Chuck's Force is a Clan Snow Raven Galaxy. Referring to the Chain of Command Table *on page 302, Chuck sees that he has a total of 27 Units in his Galaxy. His Galaxy command star pulls triple duty as a Galaxy commander, Cluster commander, and Trinary commander. Thus it only generates command points for its highest tier of command, tier 4. Chuck starts with 4 points.*

Next, he adds in his remaining 2 Cluster commanders. Each is a Tier 3 leader and each also commands a Tier 2 Trinary but they only generate points for Tier 3. Chuck adds in 6 more points bringing his total to 10. Chuck has 6 Stars that are Trinary commanders only. Each is a Tier 2 command, giving Chuck 12 more command points, for a running total of 22. Finally, he has 18 Stars that are members of Trinaries. Each is a Tier 1 command. Chuck adds 1 point for each giving him a total of 40 command points.

ADDITIONAL COMMAND POINTS (OPTIONAL)

This optional rule is for players that want to make heavy use of commands during their games. Double the command points generated for each tier of command.

MOBILE HEADQUARTERS COMMAND POINT BONUS (OPTIONAL)

For a modest boost in Command Points, players may elect to allow all Elements with the Mobile Headquarters (MHQ) ability to generate Command Points equal to their MHQ rating each turn.

ABSTRACT COMMAND SYSTEM (OPTIONAL)

In the Abstract Command system, players follow the rules as shown in this section for commands, with a few exceptions that speed up play and simplify the process. All costs remain as shown. Options 2, 3, 4, 5 and 6 are revised as follows:

Rather than using the Chain of Command diagrams (see *Commands* (Optional; see p. 298), the players simply give the drawn command directly to the desired Unit. Requests for commands work the same way—that is, rather than transiting the Chain of Command, requested commands are given directly to the requesting Unit. This effectively makes all Units one step away from headquarters in the Chain of Command. Also, this allows players to give commands directly to any Unit and request specific commands from specific Units at a reduced cost and more rapidly than if the Chain of Command is used.

The cost for commands and requests remains unchanged (but points are not spent on moving them along the Chain of Command). Players must still spend points to discard commands and requests for commands.

USING COMMAND POINTS

Command Points may be used for any of the following:

- Draw a new command from the Command Pool
- Discard a command from the Chain of Command and return it to the Command Pool
- Move a command to the next subordinate Unit in the Chain of Command
- Issue a request for commands
- Move a request for commands to the next superior Unit in the Chain of Command
- Discard a request for commands from the Chain of Command
- Detach a Unit
- Split a Unit
- Re-form a Unit
- Create an ad-hoc Unit
- Plot an artillery strike
- Plot an orbital-to-surface attack
- Make a surface-to-orbit attack
- Plot a Capital Artillery attack
- Detonate a minefield
- Execute a hyperspace jump
- Transfer Command Points
- Transfer Commands
- Bank Command Points
- Perform espionage

Draw a New Command

If a player has no command counters in his Command Pool, has already discarded command counters in the current turn, or has no command Units, he may not draw any new commands. He may perform all other actions in the Command Phase.

Command draws must be random and blind, and so a player may not look at the command counters while drawing them. Further, if a player wishes to discard any commands from the Chain of Command, he must do this after drawing commands. After drawing a command counter, compare its number to the number on the appropriate command list to determine its effects. Next, the command counter is placed face down on the Force's command origin on the Chain of Command diagram.

Drawing a command costs 2 Command Points. Any number of commands may be drawn up to the total number of Command Points available to a Force, or the total number of commands left in the command pool.

Players may also roll for commands. If there are multiple command lists available to the Force, first roll either to determine the command list then roll D10 to select a command from that list. The number rolled indicates the command "drawn," though only a single copy of each numbered command may be in play at a given time. For example, if a player rolled Alpha-7 and it was already in play, it would need to be re-rolled. However, a request for Alpha-7 could be put into play.

Commands may remain on the Chain of Command diagram (subject to the stacking limit) indefinitely.

Discarding a Command

If a player decides he no longer wants to use a command that he has placed in the Chain of Command, he may discard it. To discard a command, the player simply returns the counter to the Command Pool. However, once a player discards command counters, he may not draw new counters until the following turn. This stipulation prevents a player from attempting to stack the Command Pool with desired commands.

Discarding a command costs 2 Command Points. Any number of commands may be discarded up to the total number of Command Points available to a Force.

Moving a Command

All commands are initially placed on the Force's command origin on the Chain of Command diagram. Commands must be moved down the Chain of Command to reach Units before they can be executed. It costs 2 Command Points to move a command from one tier of command to the next subordinate tier. To move a command, the player simply places it on the desired Unit and deducts the number of Command Points from the available total. A command may move multiple times in a turn.

A command must be moved successively through each tier; that is, it must move from Tier 5 to Tier 4, to Tier 3, to Tier 2 and finally to Tier 1. This sequence represents communication from headquarters to the field Unit in command of the Formation (for example, the regimental command lance) and then from subordinate Unit to subordinate Unit until it reaches its destination Unit. Five exceptions to this rule are:

- If the Force does not employ a command Unit at a given tier of command (such as ComStar/WoB at Tier 2), the command may skip that tier free of charge.
- If the Force has lost a command Unit at a given tier, the command may skip that tier, but with a cost of 2 additional Command Points. Thus, it costs a total of 4 points for each destroyed Tier skipped in this fashion. This does not apply to the headquarters counter. A captured headquarters counter is "skipped" free of charge; see *Command Origin* p. 298.
- At the start of play, note any vacant Tiers of command between the field commander and headquarters. These tiers are skipped free of charge for the duration of the game. For

example, if the highest tier of command in a Force is a Cluster command Star, players do not have to pay to move commands and requests through the non-existent Galaxy commander. However, if the Cluster commander is destroyed, players will have to pay an additional 2 command points to pass commands and requests through this Tier.

- If the Unit in possession of a command occupies multiple tiers in the Chain of Command (such as a Clan Galaxy command Star), the command skips any subordinate tiers held by the Unit free of charge.
- If the field commander or command origin is a Unit with peers at its Tier of command, a command or request may move laterally from the Unit to one of its peers for 2 points.

Once a command reaches Tier 2, it may move directly to any subordinate Unit. A command may move any number of times during the Command Phase, but (except as noted above) must always move down the Chain of Command, and each move usually costs 2 Command Points. When a command reaches its destination Unit, it may go to any Element in that Unit, if applicable. Some commands must be played by a command Element (i.e. one with the Leader (LEAD) special ability; see p. 350); these commands will say so in their description.

A command does not need to complete its movement during a given turn. If there are insufficient Command Points available to move a command from HQ to the desired Unit, it may remain on the Chain of Command diagram (subject to the stacking limit) and begin moving on a subsequent turn. Furthermore, a player does not need to indicate the Unit to which he intends to give the command. He may change his mind at any point and give the command to a different Unit, but the counter may not move up the Chain of Command diagram.

Caleb is drawing commands for his Inner Sphere regiment. The battle has not been going well for him. He's lost several Units, including his Regimental Command Lance and Caleb's opponent captured his HQ last turn. Caleb starts the Command Phase with 45 Command Points. He spends 2 points to draw one command and gets Alpha Strike! Looking at the battlefield, he sees that his fire support lance in Alpha Company is in danger of being overrun and the enemy has reinforcements moving in. The extra damage provided by Alpha Strike! might help Caleb eliminate the Unit his fire support lance is engaging before the reinforcements arrive. Caleb decides to devote the command points to move Alpha Strike! to his fire support lance this turn.

Alpha Strike! starts at Caleb's HQ on the Chain of Command diagram. It will cost a total of 8 Command Points to move the command to his fire support lance. Since Caleb has lost his Tier 4 command Unit, commands move directly from HQ to any of his three surviving Tier 3 command Units—his battalion command lances. Unfortunately, he still must pay the cost for moving through Tier 4, thus it costs Caleb 4 points to move Alpha Strike! from his HQ to his battalion command lance. If Caleb had been playing with a battalion instead of a regiment his Force would not include a Tier 4 command Unit and it would only cost 2 command points to move Alpha Strike! from HQ to the battalion command lance. It costs 2 points to move the command from the battalion command lance to the Alpha Company command lance. Finally, it costs 2 points to move Alpha Strike! from the company command lance to the desired fire support lance. Caleb has spent a total of 10 Command Points getting Alpha Strike! to his fire support lance (leaving him with 35 points to spend this turn). Hopefully his decision will pay off.

Issue a Request for Commands

Drawing a command from the command pool is random chance. You never know what you're going to get. Sometimes, it's worth spending the extra command points to guarantee getting a specific command when you need it. Any Element may send a request counter up the Chain of Command to request a particular command—even a command that's currently in play. However, that Element's force must include a field commander. Requesting a specific command costs double the command's point value in command points. The request counter is placed on the requesting Unit in the Chain of Command diagram. Each request counter corresponds to a command counter from the command list(s). The request counter must move up the Chain of Command, from the Unit to the command origin (instead of the other way around), but has the advantage of getting the exact command where it is needed quickly.

Moving a Request for Commands

Requests for commands move identically to commands, except that they travel up the Chain of Command instead of down. All other rules for moving commands—including skipping tiers—apply. It costs 2 Command Points to move a request from one tier to the next superior tier in the Chain of Command. The request will need to move up the Chain of Command until it reaches the command origin. If the desired command is available in the Command Pool, the requesting Unit receives the command immediately. This does not cost any command points, as the cost for the command was paid when the request was issued. The command counter is placed face down on the requesting Unit (on the Chain of Command Diagram) and the request counter is returned to the Request Pool. If the command is not available in the Command Pool when the request reaches the command origin, the request is lost.

Kevin's Force is a Hell's Horses Cluster. His assault Star in Trinary Gamma currently has the Stand and Shoot command. He plans to use it this turn and would really like to use it next turn as well. Kevin spends 8 command points (the command's point value, 4, times 2) to issue a request for Stand and Shoot. He notes on the Unit's record sheet that it has requested Stand and Shoot using Counter #7, as 7 is the number for Stand and Shoot on the Hell's Horses Command List. Although the command is currently in play, he can still issue a request for it. However, Kevin can only request one copy of Stand and Shoot as it only appears on the command list once. It will cost Kevin 6 points to move the request to HQ. Two points will move the request to Trinary Gamma's command Star. It will cost another 2 points to move the request to Tier 3 (Cluster command). Finally, it will cost 2 points to move the request to the

command origin at HQ. Unfortunately, Kevin only has 1 point remaining in his Command Pool, so the request will have to stop at Trinary command. It may begin moving up the Chain of Command in a subsequent turn, and as it doesn't have far to go, Kevin's assault Star should be in good shape next turn.

Discarding a Request for Commands

If a player decides he no longer wants to use a request for commands that he has placed in the Chain of Command, he may discard it. To discard a request for commands, the player simply returns the counter to the Request Pool.

Discarding a request for commands costs 2 Command Points. Any number of requests may be discarded up to the total number of Command Points available to a Force. Discarding a request for commands does not affect drawing commands or issuing requests for commands. It's permissible to discard a request and immediately reissue it from a new Unit.

Detaching a Unit

Up to 50 percent of a Unit may be detached for independent operations. It costs 4 Command Points to detach any number of Elements from a given Unit. The expenditure of Command Points represents the additional chatter cluttering up the command frequencies (see *Separating Elements*, p. 322).

Splitting a Unit

It costs 4 Command Points to split a Unit into individual Elements. The expenditure of Command Points represents the additional chatter cluttering up the command frequencies (see *Separating Elements*, p. 322).

Re-Forming a Unit

It costs 4 Command Points to return detached Elements to their parent Unit, or reunite split Elements. The expenditure of Command Points represents the additional chatter cluttering up the command frequencies (see *Separating Elements*, p. 322).

Creating an Ad Hoc Unit

It costs 6 Command Points to create an ad-hoc Unit (for instance, combining survivors from two lances into a single lance). No command is needed. The expenditure of Command Points represents the additional chatter cluttering up the command frequencies (see *Separating Elements*, p. 322).

Plot an Artillery Strike

It costs 2 Command Points per artillery Unit to plot an artillery strike (see *Artillery*, p. 308).

Plot an Orbit-To-Surface Attack

It costs 10 Command Points per capital Naval Vessel to plot an orbit-to-surface attack (see *Orbit-To-Surface Fire*, p. 293).

Make an SDS Attack

It costs 6 Command Points per SDS Unit to make an SDS attack (see *Surface-To-Orbit Fire*, p. 295).

Plot a Capital Artillery Attack

It costs 6 Command Points per SDS Unit to plot a Capital Artillery attack (see *Surface-To-Surface Fire,* p. 295).

Detonate a Minefield

It costs 2 Command Points to detonate a single command-detonated minefield. Any or all hexes in the minefield may be detonated (see *Minefields*, p. 287).

Execute a Hyperspace Jump

A hyperspace jump costs 2 Command Points per JumpShip or WarShip. The intent to jump is announced in the Command Phase (and points are spent). The JumpShip or WarShip jumps at the end of the Movement Phase in the following turn.

Transfer Command Points

If the scenario includes multiple regiment-level commands, they may share Command Points. It costs 2 Command Points to transfer 1 Command Point to another regiment. The transfer happens immediately during the Command Phase. No regiment may receive more than 10 Command Points per turn in this fashion.

Transfer Commands

If the scenario includes multiple regiment-level commands, they may also share commands. It costs double the command's point value to transfer it to another regiment, and the command must be at the transferring regiment's HQ (or highest Tier Command Unit if no HQ exists) to be transferred.

The points are spent by the transferring regiment and the command is placed in the receiving regiment's Chain of Command diagram as if the command had been drawn by that regiment. Once used, discarded, or otherwise removed from the Chain of Command diagram, the command is returned to its original command pool.

Bank Command Points

A Formation may bank Command Points, holding them in reserve. It costs 2 Command Points to bank 1 Command Point; for example, a battalion starting with 15 Command Points would spend 10 of those points to put 5 points in the bank. Banked Command Points are not lost during the End Phase. They may be spent as normal. A Formation may not bank more Command Points than it can generate. For example, a Clan Galaxy (without headquarters) may only bank a total of 40 Command Points.

Perform Espionage

Executing the correct orders at the most opportune time is arguably the most important part of winning an engagement. Perhaps only slightly less important is keeping those orders secret

ADVANCED ESPIONAGE TABLE

Action	Modifier
Reveal a Command	–0
Reveal a Request	–0
Eliminate a Command	–4
Eliminate a Request	–3
Reveal a Command Unit	–2
Reveal Tier of Command	–4
Change a Command	–6
Initiate Forced Withdrawal	–4

until the last possible moment. For this reason, commands are usually sent by secure transmission—various forms of encryption are common, but other methods such as line of sight microwave, codes and ciphers, even non-verbal signals also see use on the 31st-century battlefield. Rarely, hardwired connections may be established between field bases. Whatever the method, a shrewd commander invests heavily in operational security and attempts to compromise his opponent's communications.

A Force may spend 6 Command Points to attempt to intercept communications between Units in the opposing Force. The player making the espionage attempt selects a command or request he wishes to reveal. This can be any command or request on the Chain of Command Diagram, but not a command in the Command Pool or a request in the Request Pool. Both players roll 2D6. If the player making the espionage attempt has a higher total, the command is revealed.

Advanced Espionage (Optional): Players who want a more detailed espionage system may use these rules instead. First, a specific Unit must make each espionage attempt. This Unit is called the spy. The spy must have the Recon and Stealth special abilities—meaning the Unit as a whole, not a single Element. If one Element in the spy Unit has Recon and another has Stealth, the Unit meets this requirement. Second, the spy must have LOS to the target Unit. Third, LOS to the target Unit must not pass through an ECM bubble, unless one of the spy Elements has a Bloodhound Active Probe. However, if LOS passes through an ECM bubble created by Angel ECM, that system negates the Bloodhound. Fourth, the espionage attempt may target more than just commands. The Advanced Espionage Table lists valid espionage targets and modifiers applied to the spy's roll. Each is explained below. Fifth, given the requirements for advanced espionage, the spy must be revealed as if it were declaring an attack. To resolve the espionage attempt, the players make an opposed 2D6 roll with the higher total winning. Each type of espionage may only be attempted once per turn, and a spy may only make one attempt per turn. Finally, commands and requests must be held by a Unit or otherwise on the Chain of Command Diagram (not in their respective pools) to be targeted.

If playing in the Succession Wars era, or another setting where ECM, Stealth, and Active Probes are not available, the spy may be any Unit comprised solely of weight or size class 1 Elements.

Reveal a Command: If the spy is successful, the opposing player flips the command face up and reveals which command from her list the number represents.

Reveal a Request: If the spy is successful, the opposing player flips the request face up and reveals which command from her list the number represents.

Eliminate a Command: If the spy is successful, he has managed to garble transmissions or otherwise prevent the transmission of orders. The command is returned to the Command Pool immediately; the Unit cannot execute the command to prevent its loss. Unlike Jam Transmission or Command Disruption, this ability is used to stop a command prior to its execution.

Eliminate a Request: If the spy is successful, he has managed to garble transmissions or otherwise prevent transmission of the request. The request is returned to the Request Pool immediately.

Reveal a Command Unit: By closely monitoring communications from one Unit, the spy can determine whether it is a command Unit. The tier of command is not revealed.

Reveal Tier of Command: The target Unit must first be revealed as a command Unit. If the spy is successful, the Unit's controlling player must reveal the Unit's tier of command.

Change a Command: Though nearly impossible, a skilled espionage team may be able to falsify battlefield orders. If the spy is successful, the targeted Unit's command is removed from the Chain of Command Diagram, and a random replacement command is drawn. Neither player may look at this command prior to its execution, though the controlling player may pay to discard it as normal.

Initiate Forced Withdrawal: If successful, the spy manages to send forged recall orders to the target Unit. The Unit will move as if under Forced Withdrawal (see p. 258, *TW*) until the controlling player spends 2 Command Points to countermand the bogus orders. No command is necessary. Once the Command Points are spent, the Unit may begin moving normally.

STACKING LIMIT FOR COMMANDS AND REQUESTS

During the Command Phase, any Unit (including headquarters) may have any number of commands or requests. At the end of the Command Phase, no Unit (or headquarters) may have more than one of each type of counter. If a Unit (or headquarters) is left with multiples of the same type of counter, the opposing player chooses one of each to remain. The remaining command counters are returned to the Command Pool, and the request counters are returned to the Request Pool.

The opposing player does not get to see what the commands or requests are, he simply selects one of each to remain on the Unit.

EXECUTING COMMANDS

Commands and requests for orders are always hidden (that is, the counter is placed and moved face down) until the command is executed. The controlling player may look at her own commands on the Chain of Command Diagram any time.

Any Unit may execute a command by turning its command counter over or otherwise revealing the command currently in its possession. However, the command must be executed in the appropriate phase; a movement command cannot be executed during the Combat Phase, and so on. The effects of the command take place immediately and last for the duration of the turn (unless the command indicates otherwise). Any number of commands may be executed in a given turn, but each Unit may only execute one command. A Unit can be affected by multiple commands.

Once a command has been executed, the command counter is returned to the Command Pool. This counts as discarding a command for purposes of drawing new commands, so players should draw their commands before executing any. If the Unit executing the command cannot meet the command's criteria, then none of the command's effects occur, and the command is returned to the Command Pool.

GROUND MOVEMENT PHASE

The following section describes the rules governing ground movement.

ALTERNATING MOVEMENT (OPTIONAL)

Players that want more of a *BattleTech* Movement Phase feel may introduce alternating movement into their *BattleForce* games. These rules follow the format presented on page 37 of *Total Warfare*. Players may elect to move any size Formation in this manner, but all players must move the same size Formations (though not necessarily the same number of Elements). For example, players can move one Unit at a time, one company at a time, one battalion at a time and so on. The Initiative Loser moves one Formation, followed by the Initiative Winner. Refer to Unequal Numbers of Units, page 39 of *Total Warfare*, if applicable.

Alternating movement by Units (lance, Star, Level II) is the most common method. Remember, in *BattleForce*, "Unit" refers to a group of Elements, meaning that 4, 5 or 6 Elements (or Units comprised of these numbers) will be moved each time. If the Advanced Military Organization rules (see p. 300) are in play, a Unit may consist of up to 9 Elements. Players should be aware that using alternating movement significantly slows down game play.

ADVANCED MOVEMENT

The expanded Movement Modes presented in *Tactical Operations* (see pp. 18-23, *TO*) may be used in *BattleForce: Advanced Rules* as follows:

Climbing

'Mechs, ProtoMechs, Infantry, and Battle Armor capable of swarming may climb. Climbing allows a Unit to ascend or descend terrain 3 or more levels different from the level it currently occupies. It costs the Element 2 MP per level to climb. An Element Unit need not complete its climb during a single turn, but any Elements that do not complete their climb may not attack. Elements that complete the climb must remain adjacent to the Elements that are still climbing unless they are split or detached. Climbing Elements are treated as if they had half their MV (rounded down) for to-hit modifiers.

> *Alice's 'Mech lance consists of 2* Assassins *(MV 7/7j) and 2* Shadow Hawks *(MV 5/3j). At the beginning of Turn 1, the Unit begins ascending a Level 8 cliff. After expending all available MV, the* Assassins *have ascended 3 levels, the* Shadow Hawks *2 levels. None of the Elements may attack during Turn 1. In the Ground Movement Phase of Turn 2, the* Assassins *ascend another 3 levels, reaching Level 6, and the* Shadow Hawks *reach Level 4. Again, none of the Elements may attack during Turn 2. During Turn 3, the* Assassins *reach the top of the cliff. They move into the new hex and may attack. However, they must remain adjacent to the* Shadow Hawks *until those Elements finish their climb. The* Shadow Hawks *may not attack during Turn 3, having only reached Level 6. In Turn 4, the* Shadow Hawks *complete their climb and may now attack as normal.*

Evading

Any ground Element may evade. An evading Element may not make attacks, but all attacks against it apply a to-hit modifier based on its Skill Rating (see the Advanced Combat Modifiers Table, p. 283). If an entire Unit evades, all Elements in the Unit cannot attack, but get a to-hit modifier based on the best Skill Rating in the Unit as shown on the Advanced Combat Modifiers Table (see p. 283).

Leaping

Only 'Mech Elements may leap. Leaping allows a 'Mech to rapidly descend any number of levels, though this maneuver always damages the 'Mech. A leap costs 2 MP regardless of the destination terrain. The 'Mech suffers 1 point of damage. Elements leaping more than 6 levels automatically suffer an MP Critical Hit.

Intentional Falls From Above

Any ground Element may intentionally move off of a higher terrain feature and drop to a lower one at a cost of 1 MP. The Element's movement ends immediately after falling and the Element suffers 1 point of damage per 3 levels (or fraction thereof) of difference between the starting and destination hexes.

Sprinting

Any ground Element may sprint. Multiply its MV by 1.5 and round up. For example, an Element with an MV of 6 would have an MV of 9 when sprinting. A sprinting Element may not make attacks. All attacks against it receive a -1 to-hit modifier.

ADVANCED TERRAIN

The advanced terrain types presented in *Tactical Operations* (see *Planetary Conditions*, p. 28, *TO*) may be used in *BattleForce: Advanced Rules* as shown on the Advanced Movement and Terrain Table (see pp. 271-272).

LARGE NAVAL VESSELS, SUPPORT VEHICLES AND AIRSHIPS

These massive Elements can take up more than a single hex depending on their *BattleForce* template: A, B or C (see Large Element Firing Arcs, p. 288). They have a facing for movement and combat, and can only change facing by one hexside each time they make a facing change. Additionally, Template A Elements must always move forward 1 hex before making a facing change and Naval Vessels are limited to water hexes of Depth 2 or deeper. Template B Elements must always move forward 2 hexes before making a facing change and Naval Vessels are limited to water hexes of Depth 3 or deeper. Template C Elements must always move forward 3 hexes before making a facing change and Naval Vessels are limited to water hexes of Depth 4 or deeper.

Large Naval Vessel Support Vehicles also have to contend with velocity similarly to aerospace Elements. Though they use MV for moving, they may only alter their movement rate by 1 point per turn. For example, a large blue water cruiser that expended 3 MV last turn can expend 2, 3 or 4 MV this turn if capable of doing so.

MOBILE STRUCTURES

Mobile Structures can fill several hexes with their bulk and operate using a slightly different set of movement rules. All movement for a Mobile Structure is measured from its leading edge—in other words, the front of the structure. Mobile Structures pay different costs to enter hexes than other Element types, as shown on

ADVANCED MOVEMENT AND TERRAIN TABLE

Movement Action	MP Cost Per Hex	Prohibited Elements
Enter Any Hex	1	—
Climb	2[14]	Non-'Mech
Evade	1[15]	—
Facing Change	Free[12]	
Leap	2[16]	Non-'Mech
Intentional Fall	1	Non-Ground
Level change (up or down)		
1 Level	+1 ('Mechs, VTOLs, Subs, ProtoMechs) +2 (Infantry, Ground Vehicles)	
2 Levels	+2 ('Mechs, VTOLs, Subs)	Infantry, Ground Vehicles, WiGE[10], ProtoMechs
3+ Levels	+1/Level (VTOLs, Subs) Ground Vehicles, WiGE[10]	'Mechs[23], ProtoMechs[23], Infantry[23]
Sprint	1[17]	Non-Ground

Terrain Type	MP Cost Per Hex	Prohibited Units
Bridge	+0[32]	
Buildings		
Non-Walled		
Light	+1[2]	VTOL, WiGE, Naval Vessel
Medium	+2[2]	VTOL, WiGE, Naval Vessel
Heavy	+3[2]	VTOL, WiGE, Naval Vessel
Hardened	+4[2]	VTOL, WiGE, Naval Vessel
Walls		
Light	+1	VTOL, WiGE, Naval Vessel
Medium	+2	VTOL, WiGE, Naval Vessel
Heavy	+3	VTOL, WiGE, Naval Vessel
Hardened	+5	VTOL, WiGE, Naval Vessel
Clear	+0[5]	Naval Vessel
Gravel Piles	+1[33]	Hover, Naval Vessel, Wheeled[34]
Heavy Industrial	+0/+1[22]	Naval Vessel
Jungle, Light	+2	Wheeled[13], Hover, VTOL[9] WiGE[9], Naval Vessel
Jungle		
Heavy	+3	Non-Infantry
Ultra-Heavy	+4	Non-Infantry
Magma, Crust	+0[18]	Wheeled Vehicles, Infantry, Naval Vessel
Magma, Liquid	+1[19]	Non-'Mech
Paved/Bridge	+0	Naval Vessel
Rail	+0/+1[20]	Naval Vessel
Road	+0[3]	Naval Vessel
Rough	+1	Wheeled, Naval Vessel
Rough, Ultra	+2	Wheeled, Naval Vessel
Rubble	+1[1]	Wheeled, Naval Vessel
Rubble, Ultra	+2[1]	Wheeled, Naval Vessel
Sand	+0/+1[21]	Naval Vessel
Tundra	+0	Naval Vessel

ADVANCED MOVEMENT AND TERRAIN TABLE, CONTINUED

Terrain Type	MP Cost Per Hex	Prohibited Units
Water		
Depth 0	+0	Naval Vessel
Depth 1	+1[1] (Level Change cost not included)	Naval Vessel[30], Infantry[11], Vehicles[4,6]
Depth 2-5	+3[1] (Level Change cost not included)	Naval Vessel[30], Infantry[11], Vehicles[4,6], IndustrialMechs
Depth 6+	+4 (Level Change cost not included)	Naval Vessel[30], Infantry[11], Vehicles[4,6], IndustrialMechs, Non-Submarines[31]
Woods		
Light	+1[7]	Wheeled[13], Hover, VTOL[9], WiGE[9], Naval Vesel
Heavy	+2[8]	Vehicles[9], Naval Vessel, Non-Infantry
Ultra Heavy	+3	Non-Infantry

Terrain Condition*	MP Cost Per Hex	Prohibited Elements
Deep Snow	+1[25]	Wheeled
EMI	+0[24]	
Fire	+1[18]	Infantry (Battle Armor excepted)
Fog	+1	
Geyser	+1[26]	Wheeled, Infantry
Ice	+1[25]	
Mud	+1[27]	
Rapids	+1[28]	
Swamp	+1[29]	

*Cumulative with other modifiers. Multiple combinations are possible, such as a heavy jungle hex with Deep Snow and EMI.

[1]MP cost to move along the bottom of the water hex

[2]Infantry pays only 1 MP to enter any building hex.

[3]If traveling along a road; otherwise, cost of underlying terrain.

[4]Hovercraft may enter all water hexes along the surface.

[5]If a wheeled Support Vehicle lacks the Off-Road Vehicle chassis and controls modification, then movement costs 1 additional MP per hex.

[6]Wheeled or tracked Support Vehicles with the Amphibious chassis and controls modification can move through any water hex on the surface at a cost of 2 MP.

[7]Infantry pays only 1 MP to enter any light woods hex.

[8]Infantry pays only 2 MP to enter any heavy woods hex.

[9]VTOL and WiGE vehicles can enter a woods hex provided their elevation is higher than the level of the woods in the hex.

[10]This only applies to WiGE Units entering a hex whose level is higher than the Unit's current hex; see Wing-In-Ground-Effect, p. 218, for rules governing entering hexes whose level is lower than the Unit's current hex.

[11]Infantry can enter a water hex of Depth 1 or deeper if they are noted as having UMU MP.

[12]Airborne aerospace Elements must pay for facing changes (see *Aerospace Atmospheric Movement*, p. 273).

[13]Wheeled Elements with the Mono movement mode (see *Tracked/Wheeled Movement*, p. 218) may enter light woods as if they were a tracked Element.

[14]MP cost is 2 points per level changed + 1 point to enter the new hex paid at the end of the climb.

[15]Attacks against this Element suffer a to-hit penalty based upon the best Skill Rating in the Unit (see *Evading*, p. 270).

[16]Element suffers 1 point of damage per three levels (or fraction thereof) leaped and an MP Critical Hit if leaping more than 6 levels (see *Leaping*, p. 270).

[17]Unit gains additional MP (see *Sprinting*, p. 270).

[18]Elements that track heat gain +1 heat if they move through this terrain at any point in the turn. All permitted Elements suffer 1 point of damage if they move through this terrain at any point in the turn (heat and damage are per-turn, not per-hex).

[19]Elements that track heat gain +2 heat and suffer 1 point of damage if they move through this terrain at any point in the turn. All permitted non-heat-tracking Elements suffer 3 points of damage if they move through this terrain at any point in the turn (heat and damage are per-turn, not per-hex).

[20]+0 MP for Rail Units, +1 MP for all others

[21]+1 for vehicles and infantry, +0 for all other Elements and vehicles with the Off-Road (ORO) special ability (see p. 351); infantry may only use climbing.

[22]+1 for 'Mechs, +0 for all others.

[23]'Mechs and ProtoMechs may choose to use leaping or climbing movement in this situation.

[24]Shots passing through a hex with Electromagnetic Interference suffer a +2 to-hit modifier. An Element occupying an EMI hex doubles the range of its ECM. EMI hexes block active probes.

[25]May not combine with magma hexes.

[26]May not combine with building, magma, paved/bridge, rail, road, sand or water hexes.

[27]May not combine with building, ice, or liquid magma hexes.

[29]May not combine with building, ice, magma, paved/bridge, rail, road or sand hexes.

[30]Large Naval Vessels may not enter water hexes that are less than Depth 3.

[31]Non-Submarines must roll for a critical hit during the End Phase of any turn that they are at this depth. Damage takes effect immediately.

[32]Treat as road

[33]+1 MP per level of the hex; for example, a Level 3 gravel pile requires +3 MP to enter.

[34]Wheeled Vehicles may enter Level 1 gravel piles, but no others.

MOBILE STRUCTURE MOVEMENT TABLE

Terrain	MP Cost Per Hex
Cost to Enter any Hex	**1**
Clear, Paved, Bridge Road	+0
Rough, Gravel, Sand, Tundra	+0
Light or Heavy Woods/Jungles	+0
Ultra Heavy Woods/Jungles	+1
Water	
Depth 0	+0
Depth 1-2	+1*
Depth 3-15	+2*
Depth 16+	+1†
Level Change	
1 Level	+0
2 Levels	+1
3 Levels+	+0‡
Building	
Light, Medium, Heavy	+0
Hardened	+1
Walls	
Light, Medium, Heavy	+0
Hardened	+1
Heavy Industrial	+1

*Level change cost not included. To enter a water hex of Depth 3 or deeper, a Mobile Structure must have the Environmental Sealing chassis and controls modification. Water Mobile Structures run aground in Depth 6 water.
†Water Mobile Structures only
‡Air and water Mobile Structures only

the Mobile Structure Movement Table (below). Additionally, Mobile Structures heavily damage any unpaved hex into which they move. A Mobile Structure converts all woods (including jungle) hexes to rough terrain, and all building hexes to rubble; however, Mobile Structures take damage equal to the building's CF when crushing buildings.

Players look at all the new rows of hexes into which the Mobile Structure will move and find the most expensive hex. If the Mobile Structure's MV limit is equal to or less than the cost to enter that hex, the structure can make the move. A Mobile Structure cannot use the minimum forward movement rule as other Elements can. Mobile Structures cannot make level changes unless at least half of their hexes are moving to the new level.

The under-layer of ground Mobile Structures is comprised of motive structure, which is easily avoidable for most ground Elements caught in the structure's path. If a Mobile Structure moves into a hex occupied by an Element with the Large, Very Large or Super Large special ability (see pp. 350, 354, and 353, respectively), or a DropShip, a collision occurs and the Element suffers 10 points of damage (5 if a Water Mobile Structure). The Mobile Structure suffers 5 points of damage from the collision and displaces the other Element one hex in the direction the Mobile Structure is traveling. If this results in prohibited terrain for the displaced Element, it is destroyed instead.

Water

Naval mobile structures extend both above and below the water's surface as described on the Mobile Structures Types Table (see p. 260, *TO*) They will run aground and be immobilized for the rest of the game if any hex of the structure enters a water hex that is not 1 level deeper than the number of levels they extend below the water. For example, a Heavy Naval mobile structure that is 10 levels "tall" actually extends 5 hexes below the waterline and rises 5 hexes above it. It will run aground if it enters a water hex with a depth of less than depth 6.

AEROSPACE ATMOSPHERIC MOVEMENT PHASE

This section focuses on aerospace movement as it relates to ground support operations. Space movement is covered in the *Aerospace Space Movement Phase* section (see p. 276).

ALTERNATING MOVEMENT (OPTIONAL)

Refer to *Alternating Movement* in the *Ground Movement Phase* section (see p. 269).

MOVING ON AND BETWEEN MAPS

These rules replace the simplified system for moving between ground and space maps presented in the standard rules. In *BattleForce: Advanced Rules*, aerospace Elements may move on and between four different maps in the same way they do in *Total Warfare* game play. Each is summarized below.

Moving on the BattleForce Map

This system of aerospace movement is presented in *BattleForce: Standard Rules* (see *Atmospheric Aerospace Movement Phase*, p. 220). Each *BattleForce* mapsheet corresponds to a hex on the Low Altitude Map. This map is oriented horizontally.

Moving on the Low Altitude Map (Optional)

The Low Altitude Map is oriented horizontally. Movement and combat take place on this map every turn. An aerospace Element moves one hex for each point of velocity it has. As with the *BattleForce* map, its velocity is reduced by half (round down) at the start of every turn.

Each hex of the Low Altitude Map represents a *BattleForce* mapsheet, and each level on a ground mapsheet hex corresponds to an aerospace altitude. To determine the height of a ground mapsheet hex, divide its printed level by 3 and round down. A result of 1 or less indicates low altitude. A result of 2 or more equals medium altitude. No terrain features extend to high altitude. Woods hexes (of any type) add one level to the hex they occupy. For example, a Level 6 hex with heavy woods is treated as being 7 levels tall. Dividing this by 3 gives a result of 2.34, which rounds down to 2. For simplicity's sake, building hexes do not rise above the underlying terrain and are ignored by aerospace Elements.

Elements must fly at a higher altitude level than the terrain beneath them. An Element that enters a hex with an altitude level equivalent to the Element's altitude must immediately begin using the rules for moving on the *BattleForce* map, entering the mapsheet from the same direction they entered the hex on the Low Altitude Map.

Moving on the High Altitude Map

The High Altitude Map—unlike the rest—is oriented vertically. If it was viewed from above, each hex would be approximately equivalent to one Low Altitude mapsheet. The bottom row of hexes represents the surface of the planet. The first four rows above that represent the upper reaches of the planet's atmosphere. The fifth row up represents the space/at-

mosphere interface; beyond that, the High Altitude Map extends 10 hexes to the limits of the planet's gravity well. Movement on the High Altitude Map is identical to movement in space except that it takes place on a vertical plane. Movement takes place every sixth ground turn during the Aerospace Space Movement Phase.

Gravity (Optional): The effects of gravity radiate out from the planet's surface, affecting all Elements on the High Altitude Map that are within 10 hexes of the space/atmosphere interface. During the End Phase of each turn, move all Elements that are within 10 hexes of the interface one hex closer to the interface. Elements operating in the atmosphere are not affected by gravity unless their Velocity is zero, in which case they move one hex closer to the ground during the End Phase of each turn. If an Element enters the space/atmosphere interface, refer to the rules below.

Maximum Atmospheric Speeds (Optional): Craft moving within the atmosphere on the High Altitude Map are limited to a velocity based on their relative distance from the ground. Refer to the High Altitude Map Atmospheric Velocity Table, below.

Entering the Space/Atmosphere Interface: An Element must have 3 or more TP available to move from the space/atmosphere interface to a space hex. When moving from space into the space/atmosphere interface an Element must make a control roll (this is an exception to the rule that *BattleForce* Elements always succeed control rolls). If a non-WarShip Element enters the space/atmosphere interface roll 2D6 with a target number equal to the Skill Rating of the Element; add +1 for each thruster or engine hit, or +6 if the Element is unable to expend thrust. If the roll is successful, the Element moves through the space/atmosphere interface without incident. If the roll is unsuccessful, the Element is reduced to zero velocity and takes 1 point of damage for every full 2 points of MoF.

If a WarShip enters the space/atmosphere interface it must make a control roll with a +10 modifier. If successful the WarShip may move back to the space map in the following turn, providing it has 4 or more TP available. If the roll fails, or the WarShip doesn't have 4 or more TP available, it begins to fall towards the planet's surface, dropping 1 high altitude row per turn until it enters the ground hex. A WarShip hitting the ground crashes and causes considerable damage. Randomly determine a ground mapsheet (or 15x17 hex region if mapsheets are not being used) for the WarShip to hit. All Elements on the affected mapsheet take damage equal to the Size Class of the WarShip x 20 x the WarShip's velocity at the time of impact. If the WarShip is Size Class 4, also apply this damage to all adjacent mapsheets.

Space/Atmosphere Interface

Crossing the space/atmosphere interface automatically generates 1 point of heat for any Element that tracks heat.

Moving on the Space Map

Moving on the Space Map follows the normal rules for aerospace space movement. The map is oriented horizontally, and movement takes place here every sixth ground turn during the Aerospace Space Movement Phase. There are no maximum velocities or gravity effects. Normally, the Space Map is used in conjunction with the Ground Map, and one edge of the Space Map is designated as the surface of the planet. The first 16 hexes from that map edge become the High Altitude Map.

The "Deep Space" Map: The Space Map may also be used without a High Altitude Map when playing a game without ground Elements. Generally this "deep space" map represents the area around a jump point, but any region of space may be used. This point in space, even if just a few hours from the planet, is too far away for any Units exiting it to reach the planet in time to affect the game there, as twenty *BattleForce* space turns occur per hour of game time.

However, players may want Elements to be able to leave the "deep space" map and arrive at the planet in time to affect the ground game. In this case, they should set an arbitrary number of turns of delay (representing transit time) between departing the "deep space" map and arriving on the Space Map. This mechanic can provide the exhilarating feel of reinforcements arriving, though it sacrifices some realism to do so.

Moving Between Maps

Instead of abstract movement between each map, the Ground and Space maps are connected by the High Altitude Map: a vertical region representing the distance from the surface of the planet to orbit and the extent of the planet's gravity well (15 hexes from the surface). Beyond this distance lies the Space Map. To "descend" from the Space Map to the High Altitude Map, an Element need only move to within 15 hexes of the map edge designated as the planetary surface. Descending from the High Altitude Map is free. The Element chooses a side of the mapsheet and enters the corresponding Low Altitude Map in the next Aerospace Atmospheric Movement Phase. If multiple sides of the mapsheet can match its direction of travel, the controlling player chooses one.

Descending from the Low Altitude Map to the *BattleForce* Map is free. If the Element has velocity remaining, it begins moving on the *BattleForce* Map immediately, choosing a side of the mapsheet corresponding to its direction of travel. If the Element does not have velocity remaining, it is placed in Hex 0909 of corresponding mapsheet with a facing that matches its direction of travel. If multiple hexsides can match its direction of travel, the controlling player chooses one.

Ascending from the *BattleForce* Map to the Low Altitude Map is free. The Element is placed in the corresponding hex on the Low Altitude Map with a facing that matches its facing on the *BattleForce* Map. Ascending from the Low Altitude Map to the High Altitude Map costs 2 Thrust Points. The Element is placed in the ground hex corresponding to the Low Altitude mapsheet from which it ascended and may move during the next Aerospace Space Movement Phase. To move from the High Altitude Map to the Space Map, an Element need only move past the planet's gravity well (15 hexes from the ground hexes on the High Altitude Map).

SPECIAL MANEUVERS

The following special maneuvers may be performed by aerospace and conventional fighters. Success is automatic. A Unit may only attempt these aerobatic maneuvers if all Elements in it are Skill Rating 3 or lower; otherwise, Elements must be split or detached to perform these maneuvers. The Special Maneuvers Table shows the Velocity and Thrust requirements for each maneuver, along with its description.

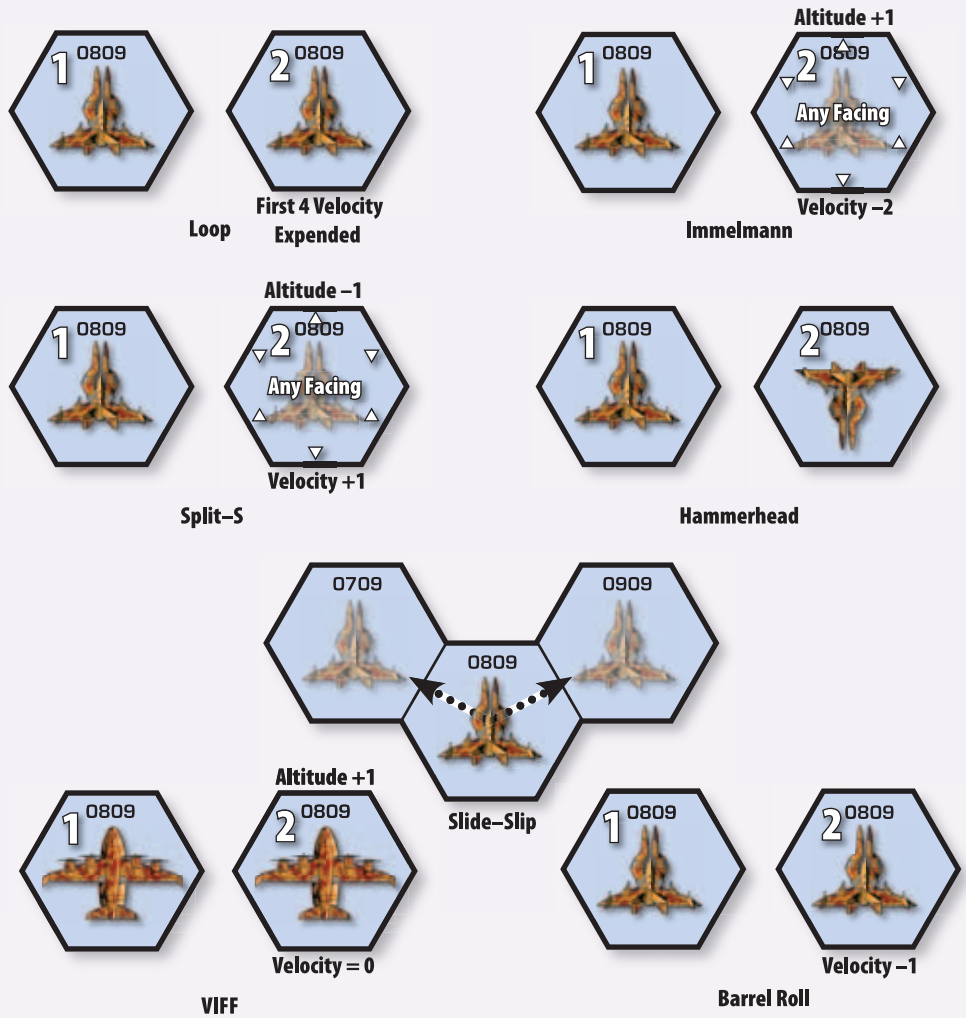
HIGH ALTITUDE MAP ATMOSPHERIC VELOCITY TABLE

Altitude	Maximum Velocity
Ground Hex	2
Row 1	3
Row 2	6
Row 3	9
Row 4	12
Interface	15

SPECIAL MANEUVERS TABLE

Maneuver	Min/Max Velocity	TP Cost	Effect
Loop	Min 4	3	The Element spends its first 4 points of Velocity in the loop, though the actual velocity remains unchanged. It ends in the same hex where it started the move, then spends the remainder of its Velocity normally.
Immelmann	Min 3	3	The Element gains one altitude and ends the maneuver facing any hexside. Velocity drops by 2. The remainder is spent normally.
Split-S	Any	2	The Element loses one altitude and ends the maneuver facing any hexside. Velocity increases by 1.
Hammerhead	Any	Velocity	The Element remains in its starting hex, but changes facing 180 degrees.
Barrel roll	Min 2	1	The Element rolls 360 degrees, ending with the same facing. Velocity drops by 1.
Sideslip	Any	1	Instead of moving into the hex directly ahead, the Element moves 1 hex to the front-left or front-right without changing facing.
VIFF	Any*	Velocity +1	Successfully using this Vector in Forward Flight maneuver, a VSTOL Element halts its forward momentum and gains one altitude.

* VSTOL Unit only



• SPECIAL MANEUVERS DIAGRAM •

AEROSPACE SPACE MOVEMENT PHASE

The following section describes the rules governing movement in space.

SPACE MOVEMENT BASICS

Several new Unit types in *BattleForce: Advanced Rules* require additional movement rules.

JumpShips

JumpShips are almost static in *BattleForce*. Their station-keeping drives are not designed to produce significant thrust and provide only .2 Thrust Points per turn. For example, it takes a JumpShip four turns to build up sufficient thrust to expend 1 TP on adjusting its velocity. A JumpShip may build up more TP than what is required to make a single hexside heading change based on its current velocity.

JumpShips with a Velocity of zero may change their facing one hexside per turn at no cost and may use thrust to increase the number of facings changed at a cost of .2 TP per facing change.

Furling/Unfurling Jump Sails: Prior to any maneuvering, JumpShips must furl (close) their jump sails. Reeling in a jump sail takes 350 turns. Unfurling a jump sail takes 180 turns.

Satellites

Satellites fall into two broad categories: those with geocentric orbits and those with geostationary orbits. Satellites are usually constructed with attitude control jets that produce fractional Thrust Points. They may use these jets to make facing changes at a cost of .2 TP per hexside changed. If the Thrust Points for a Satellite are not given, assume it may generate .2 TP per turn. A Satellite may build up Thrust Points to make several facing changes in one turn, but may not accumulate more than 1 TP.

Maneuvering into a higher or lower orbit and accelerating or decelerating to adjust orbital periods are beyond the scope of these rules.

Geocentric Low Orbits: Satellites with these orbits are in motion relative to the ground. They move on the High Altitude Map at Altitude Level 3 with a Velocity of 13. If the mapsheet is arranged in such a way that a Satellite can maintain a straight path (parallel to the ground hexes), it should move along that path. If the orientation of the mapsheet makes a straight path (parallel to the ground hexes) unavailable, the Satellite must alternate moving forward and to the left, then forward and to the right (these moves do not require a facing change or the expenditure of thrust) so that it traces a zigzag path above the ground.

When a Satellite in geocentric low orbit moves off the map, it reenters the map on the opposite side in a set number of turns. The formula to determine this is:

180 – Number of turns spent crossing the map = Turns until reentry

For example, if a Satellite takes five turns to cross the map, it will reenter on the opposite side of the map in 175 turns (180 – 5 = 175).

Geostationary Orbits: Elements in this orbit are actually traveling at a Velocity of 5, but are stationary relative to the ground map and are treated as if they had a Velocity of zero.

Deploying Satellites: A Satellite may be deployed by any aerospace Element with sufficient cargo space. To deploy a Satellite, the transporting aerospace Element must stop (decelerate to Velocity 0) in the desired hex on the High Altitude or Space map. The Satellite is automatically deployed in the End Phase of that turn. Such placement temporarily puts the Satellite in a geostationary orbit. Properly adjusting the position of the Satellite requires 2 hours of time (80 turns) and a successful 2D6 roll of 8+. Without proper adjustment, the Satellite is automatically destroyed after 80 turns. With proper placement the Satellite will remain indefinitely for the purposes of *BattleForce* games.

A Satellite that has not been properly placed is still useable per these rules. A Satellite deployed within the gravity well of the planet will be useable until it reaches the space/atmosphere interface.

Discovering Satellites: If neither Force puts a Satellite into play, a Satellite still may be available. In the End Phase of any turn, any Element with MHQ4 or greater may roll 2D6 to attempt to discover a civilian Satellite. DropShips are assumed to have MHQ7 for purposes of interacting with Satellites. On a roll of 8+, a Satellite in geocentric low orbit is available and has just entered the High Altitude Map. On a roll of 12, a Satellite in geostationary orbit is available. More than one Satellite may be discovered, and players may roll each turn for each Element with MHQ4 or greater. An appropriate miniature should be placed on the High Altitude Map (geocentric low orbit) or Space Map (geostationary orbit) when the Satellite is discovered.

Only one Satellite of each type may be available during a turn. If multiple discovery rolls are successful, only one Satellite of each type is discovered. Only the Force that discovered the Satellite is aware of it. If both Forces discover the same type of Satellite in the same turn, they automatically discover the same Satellite. If only one Force discovers a Satellite in a turn and the other Force discovers a Satellite of the same type in a subsequent turn, the opposing Force has automatically discovered the same Satellite.

Controlling Satellites: Discovering a Satellite does not automatically grant control of it. To gain control of a Satellite, any Element with MHQ4 or greater must hack into it during the End Phase by making a 2D6 roll against a target number of 9. If the roll is successful, the Force immediately gains control of the Satellite and the accompanying bonuses as described in *Battlefield Intelligence* (see p. 263). If those rules are not in play, the Satellite simply confers a +1 Initiative bonus.

Stealing Control: A Force may only steal control of a Satellite it knows about, meaning that even if the opposing Force is making use of the Satellite, control cannot be contested until both Forces have discovered it. Stealing control of a Satellite is done in the End Phase, with a 2D6 roll against a target number of 11, and may only be attempted by Elements with MHQ4 or greater. If the roll is successful, the Force immediately gains control of the Satellite and its corresponding bonuses. A Satellite may only change hands once per End Phase.

Space Stations

Space Stations are generally static in *BattleForce* games. Like Satellites and JumpShips, they may make facing changes at .2 TP, and may build up 1.2 TP. Military Space Stations (defined as any

Space Station capable of doing 1 point of *BattleForce* damage) may make one free facing change per turn, in addition to those made by expending TP. If the TP for a Space Station is not given, assume it may generate .2 TP per turn.

WarShips

WarShips maneuver similarly to DropShips, but must move forward one hex before making a one-hexside facing change.

Detaching Jump Sails: Prior to any maneuvering or executing hyperspace jumps, WarShips must furl (close) their jump sails. Times for this are the same as for JumpShips. Additionally, WarShips may detach their jump sails. This process takes 4 turns. Reattaching a jump sail takes 12 turns and requires the WarShip to successfully dock with the jump sail first.

ALTERNATING MOVEMENT (OPTIONAL)

Refer to *Alternating Movement* in the *Ground Movement Phase* section (see p. 269). If alternating movement is in play, the following rules also apply.

Advanced Movement Sequence

In *BattleForce: Advanced Rules*, aerospace Units must follow a movement sequence based on the type of craft that is moving. The sequence, from first to last, is:

1. Satellites
2. Ground Units in zero-G
3. Space Stations
4. JumpShips
5. WarShips
6. DropShips and DropShip squadrons
7. Small Craft
8. Aerospace fighters/fighter squadrons

Advanced Initiative

Advanced Initiative (see p. 63) may be used instead of the advanced movement sequence; however, it is strongly discouraged because of the increased time required to complete the Aerospace Space Movement Phase.

ADVANCED MOVEMENT (OPTIONAL)

These rules apply to all aerospace Elements, including ground Units deployed for zero-G ops. If vector-based movement rules are used, increase the Thrust Points available for all aerospace Elements (except JumpShips, Satellites and Space Stations) by 50 percent; multiply their TP by 1.5 and round up. Players may elect to apply these rules to all Elements on the Space Map, or only to certain types of Elements (for example, only to aerospace fighters, while DropShips and WarShips use standard movement).

Vector-Based Movement

A more realistic (though more complicated) form of aerospace movement is vector-based movement. It's described in detail on pages 64–66 and used in *BattleForce* exactly as presented.

Rotational Vectors and Lateral & Deceleration Movement: *BattleForce* Elements may use these rules exactly as described in the Advanced Aerospace Movement (see p. 65).

Emergency Combat Heading Operation

BattleForce DropShip and WarShip Elements may use these rules exactly as described in the Advanced Aerospace Combat (see p. 113). Assume the Element has used maximum thrust (i.e. apply a +2 to-hit modifier for its shots) when using this rule.

Yawing and End-Overs

Yaws and end-overs have the same effect in *BattleForce*: both change the facing of an Element 180 degrees. Yawing and end-overs cost 2 Thrust Points to execute. Rotational vectors may be used with this rule.

DOCKING

BattleForce uses the same rules for these actions as described in the Advanced Aerospace Movement (see p. 66). The following modification is applied: no Control Roll is required for docking operations and the attempt takes 15 minutes.

TOWING

Only an Element that has been successfully docked (see *Docking*, above) may be towed. To determine the Thrust Points available to the towing Element, use the Naval Tug Adapter rules on page 335 of *Tactical Operations*. When determining the tug's Safe Thrust Rating, round normally to the nearest .25 and do not calculate Maximum Thrust. This value represents the Thrust Points available to the towing Element. Assume every aerospace Small Craft and larger Element in *BattleForce* has a tug adapter.

EVASIVE MANEUVERS

Aerospace Elements may engage in erratic movements in order to become more difficult targets. This movement costs 2 TP and affects the Element's ability to engage targets depending on the size of the craft. For simplicity's sake, if any Element in a Unit wishes to use evasive maneuvers, all Elements in the Unit must use them (see Advanced Combat Modifiers Table, p. 283).

HYPERSPACE JUMP

JumpShips and WarShips can travel up to 30 light-years in a few moments using their Kearny-Fuchida drives. In *BattleForce: Advanced Rules* games, a hyperspace jump can be either inbound or outbound.

Note: In this section, rules that apply to JumpShips also apply to WarShips.

Furling or Detaching the Jump Sail: Prior to making a hyperspace jump, the jump sail must be furled or detached, though WarShips rarely leave their jump sails behind.

Inbound Jumps

Inbound jumps must be plotted prior to the start of play and before any Units are deployed. The player controlling the inbound JumpShip secretly records its target hex (indicating which mapsheet if necessary), facing, and the turn in which he wants it to arrive.

JumpShips generate an infrared signature that appears in the destination system before they do. In the End Phase of the turn before the Element is to arrive, the controlling player must reveal the destination hex, though not the Element's facing.

JumpShips may only execute a hyperspace jump when on the "deep space" map.

Effects of the Emergence Wave: The emergence wave—created when the JumpShip/WarShip arrives at its destination—has the following effects:

- It "stuns" the arriving JumpShip/WarShip. Neither the Element nor its transported Elements may take any actions during the turn in which they arrive.
- Any Elements present in the destination hex with functional K-F drives (with at least 1 point of integrity) lose 2 points of K-F drive integrity and take 5 points of damage to their structure.
- Roll 1D6 for each Element in the destination hex (without the KF ability). On a result of 1, the Element takes 10 points of damage.

Catastrophic Deviation (Optional): JumpShips usually arrive within 5,000 meters of their intended destination. However, things do go wrong from time to time. Players wishing to add a degree of randomness to the process may have the controlling player roll 2D6 for each inbound JumpShip during the turn in which its IR signature arrives. On a result of 10 or higher, the JumpShip arrives off target with a random facing.

Determine the new position for the JumpShip as if it were an artillery round aimed at the target hex. The IR signature should be moved to this hex as well.

Mis-jump (Optional): On extremely rare occasions, a hyperspace jump goes horribly wrong. If a JumpShip suffers catastrophic deviation, roll 2D6. On a result of 12, the JumpShip mis-jumps instead. In a regular *BattleForce* game, the JumpShip is removed from play. If applicable in a campaign, the effects of the mis-jump must be determined. Roll 2D6 and consult the Mis-Jump Table.

MIS-JUMP TABLE

2D6 Roll	Effect
2	Jump successful: Element takes 2 K-F Drive critical hits.
3	Jump successful: As with a result of 2, plus Element deviates 1D6 x 1D6 hexes in a random direction
4	Jump failed: Element remains in origin system. Jump may be reattempted immediately.
5-9	Jump failed: Element remains in origin system. K-F drive charge depleted. Jump may be reattempted once K-F drive is recharged.
10	Mis-jump: Element arrives in a randomly determined system within 30 LY of its origin.
11	Mis-jump: As with a result of 10, and the Element takes 4 K-F drive critical hits.
12	Mis-jump: Element and all Elements it is transporting are permanently lost.

Collision (Optional): The vastness of space makes collisions resulting from a hyperspace jump highly improbable; however, for additional flavor, collisions may be added to *BattleForce: Advanced Rules* games. If these rules are in use, no player may intentionally maneuver into the destination hex on the turn in which a JumpShip/WarShip is inbound.

In a random order, roll 2D6 for each Element in the destination hex on the turn the inbound JumpShip/WarShip arrives. If the result is a 12, the JumpShip materializes close enough to the Element that they collide. The effects are as follows:

- If the Element is a JumpShip or Warship, both ships are destroyed. DropShips docked to either Element escape destruction on a 1D6 roll of 6. All other transported Elements are destroyed.
- If the Element is a DropShip, the DropShip is destroyed. The JumpShip/WarShip takes 20 points of damage and 2 K-F Drive critical hits.
- If the Element is a DropShip squadron, follow the effects for DropShips, except determine one DropShip randomly.
- If the Element is a Small Craft, the Small Craft is destroyed. The JumpShip/WarShip takes 5 points of damage.
- If the Element is an aerospace fighter roll 1D6. On a 6, the fighter escapes, otherwise it is destroyed and the JumpShip/WarShip takes 1 point of damage.
- If the Element is a fighter squadron, roll 1D6 for each Element in the squadron. On a 6, the Element evades the collision. Otherwise, the Element is destroyed. The JumpShip takes 1 point of damage for each fighter destroyed in this manner.

Chuck's Congress*-class WarShip is jumping in on Turn 6. In the End Phase of Turn 5, Chuck reveals his target hex: 0608. Chuck also rolls 2D6 to check for catastrophic deviation. He gets a 10, indicating his WarShip will be off target. Because he's deviating, Chuck also has to check for a mis-jump. He rolls 2D6 again, getting a 4. Chuck's WarShip won't mis-jump, but it won't arrive where he wants it to. Chuck rolls 1D6 for the direction in which the WarShip will deviate, getting a 3. He then rolls 1D6 for the number of hexes it will deviate by, getting a 5. The new destination hex for the* Congress *is Hex 1111. An IR signature counter is placed in that hex. After the Space Movement Phase in Turn 6 the* Congress *arrives.*

Unfortunately, Hex 1111 is occupied by a Union*-class DropShip and a fighter squadron. The DropShip is automatically hit and destroyed. Chuck's ship takes 20 points of damage and 2 K-F Drive critical hits. Next Chuck must check for collisions with the fighter squadron. 1D6, 6 times getting 4, 3, 4, 5, 6, and 1. Only one fighter escapes. The remaining five are destroyed and the* Congress *takes 5 more points of damage.*

Outbound Jumps

To execute an outbound hyperspace jump, the controlling player spends 2 Command Points during the Command Phase of a turn. The jump occurs at the end of the Movement Phase in the following turn. The JumpShip must have a fully charged K-F drive or charged lithium-fusion batteries (see *Lithium-Fusion(LF)* special ability, p. 350).

If applicable in a campaign, the destination system, zenith or nadir jump point, and/or destination must be declared.

A hyperspace jump may be cancelled in the Command Phase of the turn in which the jump is set to occur. This costs zero Command Points. Once the Command Phase is concluded in the jump turn, the jump attempt must proceed.

Damaged K-F Booms: If any transported Elements have damaged K-F booms, the JumpShip/WarShip may not attempt a jump.

Effects on Nearby Units: If any Elements are in the hex when a JumpShip/WarShip executes an outbound jump, roll 1D6 for each Element. On a result of 1, the Element takes 10 points of damage.

Disrupting a Jump: If another JumpShip/WarShip is present in the same hex—and has a functional K-F drive—it will disrupt the jump attempt. Roll for a critical hit on both Elements.

GROUND UNITS IN ZERO-G OPERATIONS (OPTIONAL)

Ground Elements are not designed for movement in zero-G and suffer severe limitations. Using them in this fashion requires converting their MV to TP. The only ground Elements that may operate in space are BattleMechs, OmniMechs, battle armor and Elements with the Space Ops Adaptation (SOA) special ability (see p. 353).

These Elements have Thrust Points equal to their Jumping MP divided by 3, rounded down to a minimum of 1. They may only expend TP (regardless of amount) for a number of turns equal to their Jumping MP. These turns need not be consecutive; for example, an Element with an MV of 6j would have a TP of 2 in zero-G and be able to expend TP for 6 turns.

Elements deployed in this manner maneuver as if they were aerospace fighters with respect to adjusting velocity and making facing changes.

FIGHTER AND DROPSHIP SQUADRONS

These Units move identically to aerospace Units as presented in the standard rules: that is, as the Element with the least available TP in the Unit.

COMBAT PHASE

The Combat Phase in *BattleForce: Advanced Rules* works the same as in the standard-rules game, but *BattleForce: Advanced Rules* introduces several new types of attacks and modifiers plus several new Unit types that require additional combat rules. Changes to the core combat rules—those that apply to all Units—are presented first, followed by each new Unit type or attack mode (ground first, then aerospace). Sub-headings in the *Core Combat Rules* section correspond to the sub-headings in the *Combat Phase* section in the standard rules game.

CORE COMBAT RULES

The following section covers additional advanced rules governing combat.

Attack Declaration

The advanced rules include multiple new types of attacks, along with new rules for looking at an opponent's record sheets.

Concealing Unit Composition

Use of these rules may require a gamemaster or other neutral third party, as they present numerous options for cheating. Though these are part of the core rules, players should carefully consider whether they are appropriate for their style of game play.

Blip Counters

In *BattleForce: Standard Rules*, all the details for any Unit or Element are readily available. Advanced *BattleForce* intro-



The Fortieth Shadow Division hammers against a hill defended by a combined House Steiner and Clan Wolf force.

duces a fog-of-war concept that conceals information. Instead of putting a representative miniature on the battlefield, Units are initially represented by blip counters. This indicates a Unit's position on the battlefield, but leaves the opponent guessing beyond that. Prior to beginning play, each blip counter must be assigned a unique number corresponding to a Unit in the Force. Airborne aerospace Elements and aerospace Elements in space cannot be represented by blip counters.

When moving, a blip counter must obey all movement restrictions normally enforced on the Unit it represents. For example, a blip counter representing a Unit with a tracked Element could not enter a Depth 1 water hex. A shrewd opponent can therefore speculate about the composition of the Unit based on its actions. Alternatively, a cagey player can maneuver a blip counter in a manner that implies it is a different type of Unit.

Identifying Units: A Unit is identified and its blip counter is removed and replaced with the appropriate representative miniature when any of the following conditions are met:

- **Visual Spotting:** At the end of the Movement Phase an opposing Element has LOS *and* is within the indicated range for the atmospheric condition:
  - **Pitch Black:** 1 hex
  - **Night/Moonless Night/Blizzard:** 2 hexes
  - **Fog/Blowing Sand:** 3 hexes
  - **Dusk/Dawn/Rain (Torrential):** 5 hexes
  - **Rain/Snow:** 7 hexes
  - **Daylight:** 20 hexes
- **Sensor Spotting:** At the end of the Movement Phase an opposing non-infantry Element—regardless of LOS—is within 5 hexes; within 6 hexes if the opposing Element has the Light Active Probe ability, 9 hexes with the Active Probe ability or 13 hexes with the Bloodhound ability. If an Element in the Unit represented by the blip counter has the Electronic Countermeasures (ECM) special ability (see p. 348), the Active Probe range bonuses are negated; however, the Bloodhound ability still works unless the Unit has Angel ECM.
- **Aerospace Spotting:** An opposing aerospace fighter overflies the mapsheet or flies within 20 hexes. The aerospace Element must be operating on the ground or low altitude map.
- **Orbital Spotting:** A DropShip in uncontested orbit (meaning the opposing side fields no aerospace Elements with the Spaceflight (SPC) special ability; see p. 353) may observe the battlefield, revealing all blip counters. If all Elements in a Unit have the Stealth (STL) or Mimetic Armor System (MAS) special ability (see pp. 353 and 351, respectively), they retain their blip counter.
- **Satellite Spotting:** If the opposing Force has a Satellite available, all blip counters must be revealed; however, Elements with the Stealth (STL) or Mimetic Armor System (MAS) special ability (see pp. 353 and 351, respectively) retain their blip counter.
- **Other Situations:**
  - A direct attack is made against the Unit. Area-effect attacks striking a blip counter do damage to the Elements as normal, but the Elements do not have to be revealed.
  - Any Element in the Unit makes an attack or takes other action (such as espionage) that requires revealing it
  - The Unit is split or detached (see *Separating Elements*, p. 322)

Concealing Units: An identified Unit may become concealed during the course of play if it can maneuver such that no opposing Element would be able to identify it if it were a blip counter. Essentially this means moving into a position where LOS does not exist with any opposing Elements and all opposing Elements are 4 hexes away (8 hexes away if they have the Active Probe or Recon special abilities). If this happens, create a new blip counter and new number for the Unit and replace its miniature with the new counter.

Advanced Blip Counters (Optional)

Players who thirst for more fog-of-war aspects in *BattleForce* may add the rules below.

- Individual Elements may be represented by blip counters. This removes the requirement to reveal Elements when their Unit is split or detached, but has the potential to significantly slow down game play as it increases the number of times the conditions for Unit identification must be checked each turn. When a Unit is split or detached and this rule is in effect, additional blip counters are placed on the map to represent each Element.
- Elements with ECM (or those enveloped in an ECM bubble), Stealth (STL), or Mimetic Armor System (MAS) are only identified by visual spotting.

Concealing Record Sheets

In general, players are not allowed to view their opponent's record sheets before announcing the targets of their attacks. The attacking player is entitled to know which Elements of the target Unit are destroyed and which are still functional, and also each Element's name (but not its specific variant or configuration, e.g. *BattleMaster*, but *not* BLR-1G *BattleMaster*). Beyond that, however, players must rely on memory and instinct. This rule is intended to prevent the game from getting bogged down while both players study each other's record sheets and calculate the exact damage needed for each attack. It also serves to simulate a reality of war: namely, that it is difficult to tell the precise condition of enemy Units in the middle of a battle.

It is possible to reveal the exact variant or configuration and weight/size class of an Element (see below). Once this happens, the variant or configuration and weight/size class remains revealed for the duration of the game. The Element's current state—damage taken, heat level (if applicable), MV and movement mode—may also be revealed, but this information is point-in-time only. In other words, though an Element's current state is revealed in one turn, it might be concealed in another. Players are encouraged to take notes to track the status of Elements they reveal.

An Element's variant/configuration, weight/size class, and current state can be revealed in two ways: through active probes and at short range.

Active Probes: Elements equipped with active probes have an extended view of the battlefield, enabling them to provide information about targets without moving into short range. Each Element with an active probe can scan a single enemy Unit within its range: 1 hex for a Light Active Probe, 4 hexes for a standard Active Probe, 8 hexes for a Bloodhound. The probe-equipped Element completes its scan just before the Unit declares its attacks. No die roll is required; the opponent simply lets the attacking player know the variant or configuration, heat, damage status, MV and movement modes of the Elements in the target Unit. The attacking player must request this information; it need not be volunteered.

An active probe's scan is blocked if LOS between the scanning Element and the target passes through or into an opposing Element's ECM bubble. A Bloodhound probe overrides ECM unless the bubble is created by an Angel ECM. Neither an active probe, nor short range reveals the Skill Rating or point value of an Element (though if requested by the opposing player, both must be revealed when the Element is destroyed).

Short Range: If an attacking Unit is within short range of its target, the opposing player must reveal the current damage (if any), heat level (if applicable), MV, movement mode and variant/configuration of each Element in the target Unit. The attacking player must request this information. If he fails to do so, his opponent does not have to volunteer it.

Custom Configurations

Players using custom configurations (i.e. a configuration not found in a FASA, FanPro, or Catalyst Game Labs supplement) of canon Elements or using Elements of their own design must follow additional rules when concealing record sheets. When the current state details would be revealed, the following rules apply:

Custom Configurations: The controlling player must reveal that the Element is a custom configuration—even if the change is something as simple as pointing rear-facing weaponry forward. The controlling player need not reveal details about the customization except as follows: If the configuration is a significant variation from the standard model this must also be revealed. For purposes of this rule only, a significant variation is any configuration that, when compared to the primary version appearing on the *BattleForce Master Element List,* has a difference of 2 or more in: MV, Armor, any damage value, or number of special abilities.

Player-Designed Elements: If players regularly use their own designs, they have two options: 1. They can create a list of homemade Elements similar to the *BattleForce Master Element List,* and make it available for all players. 2. Designate a canon Element as an analogue for each player-designed Element. The analogue must meet all the following criteria:

- Be of the same weight class
- Have no more than a 1 point difference in non-jumping MV
- Have no more than a 3 point difference in armor
- Have no more than a 1 point difference in damage value for at least half the range brackets.

If no canonical Element meets these criteria, players must select the closest analogue available. For example, a NSR-9J *Nightstar* (MV: 3, S/M/L: 6/6/4, Armor/Structure: 10/4, WT: 4) could be used as an analogue for a player-designed SLR-3D *Slasher* (MV: 3, S/M/L: 5/5/5, Armor/Structure: 10/8, WT: 4).

Beginning Players (Optional): The purpose of concealing record sheets is to add a fog of war aspect for experienced players. It is against the spirit of these rules to use them to hinder new players. Experienced players should allow new players full access to their record sheets while letting new players conceal their own record sheets or otherwise agree on modified concealment rules.

Stealth Armor (Optional): As an optional rule, any Element with the Stealth (STL) special ability (see p. 353) never need reveal its current state information.

Limited Targeting & Tracking Systems (Optional): At the time of this writing there are roughly 2,000 Elements available in the *BattleTech* universe. Although a detailed electronic catalog of all those Elements could easily exist, players may want to limit that number. The simplest way to do this is require a 2D6 roll the first time an Element tries to reveal the current state of an opposing Element. On a result of 4 or less, the target Element is not in the computer, and current state information is not revealed. Players are free to design other limitations so long as they are agreeable to all players.

Concealing Element Capabilities

In an effort to obfuscate the true nature of her Elements (or for other tactical considerations), a player may elect to have them move more slowly and/or do less damage than they are actually capable of. Once the nature of an Element is revealed, the controlling player may still choose to move more slowly and/or deliver reduced damage.

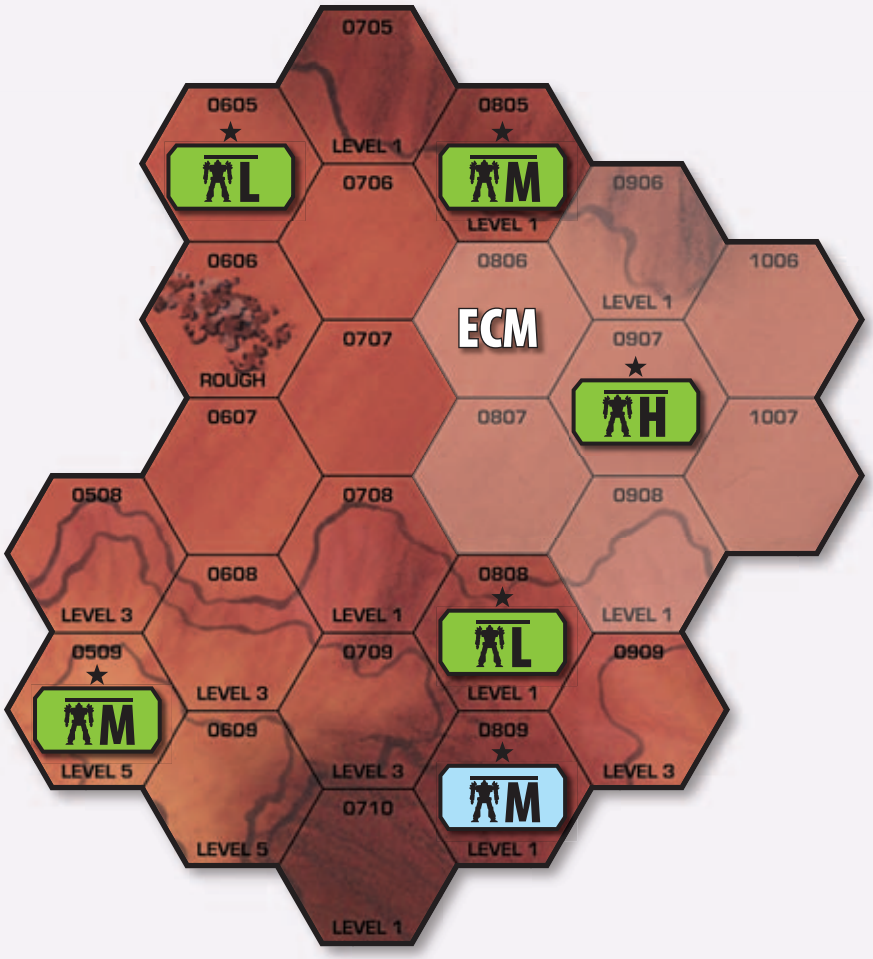
Skill Rating (Optional): Players may also elect to "miss" shots by using a Skill Rating higher than the Element's actual Skill Revel when making attacks. Prior to the game, players should carefully consider using this option as it introduces a significant opportunity for cheating. A neutral GM may be necessary to validate Skill Ratings. Alternatively, players may find another method (such as separate written list of warriors and Skill Ratings) to confirm actual Skill Ratings.



Ian McKinnon surveys the chaos of battle from the cockpit of his BL-10-KNT Black Knight.

In the Active Probe Diagram at right, Aaron's Ghost Bear Star ends its turn in Hex 0809. He has a Dasher *A in his Star with the Active Probe ability. A Jade Falcon Star is in Hex 0808. Four other Jade Falcon Stars are on the map in hexes 0509, 0605, 0805 and 0907. The Star in Hex 0907 has ECM.*

Aaron is able to obtain damage, heat, MV, movement mode, and variant information on the Star in Hex 0808 as it is within short range. Aaron can also obtain this information on the Star in Hex 0509 as it is within range of his active probe. He cannot obtain additional information on the Star in Hex 0605 as it is out of range for the active probe. Though the Star in Hex 0805 is within range, the LOS passes through hexes 0807 and 0806, both of which are covered by the ECM field generated by the Star in Hex 0907. Therefore, Aaron is unable to get additional information about that Star. Also, since the Star in Hex 0907 has ECM, Aaron cannot get information on it, either.



• ACTIVE PROBE DIAGRAM •

VERIFY LINE OF SIGHT (LOS)

Large, Very Large and Super Large Elements (with movement modes I, N, or S), DropShips and Mobile Structures block LOS. The Element Height Table has been expanded to include these Elements. Heights have been added for new types of terrain.

Terrain Height and Depth

Each hex's level is marked on the map. Hexes with levels higher than 0 are also referred to as hills.

Hexes with levels lower than 0 are also referred to as sinkholes. All affect LOS in the same way. If targeting a hex, the level of the adjacent hex along the LOS between the attacker and target is considered to be 1 level lower.

Woods: Depending on their type, woods rise 2 or 3 levels above the level of the underlying hex they occupy. Ultra-heavy woods rise 3 levels; all other types rise 2 levels.

ELEMENT HEIGHT TABLE

Type	Height*
'Mechs	2 levels
ProtoMechs, Vehicles, Infantry and Fighters	1 level
Large Support Vehicles and Small Craft	2 levels
Very Large Support Elements	3 levels
Super Large Support Elements	4 levels
Aerodyne DropShips	5 levels
Spheroid DropShips	10 levels
Mobile Structures	Varies**

*A Unit's height levels (or elevations, if airborne) must be included in the level of the underlying hex when determining a Unit's total height; the height of aerospace Units for LOS purposes is irrelevant while airborne.

**Refer to the Mobile Structure's *Total Warfare* statistics for its height.

Verify Firing Arc

New firing arcs have been included for the following new Element types. Refer to the entries for each later in this section.

- JumpShips
- Satellites
- Space Stations
- WarShips
- Large, Very Large and Super Large Support Elements
- Mobile Structures

Determine Range

Ground-based extreme range is an option under the advanced rules. On the ground map, extreme range is 9-10 hexes (5 hexes underwater). A ground Element (or grounded aerospace Element) may make an attack at extreme range only if it has a long range damage value. A +6 to-hit modifier is applied for these attacks. On a successful hit, damage is equal to the Element's long range damage value –1 (this can reduce damage to zero).

Also, artillery range for ground Elements has been added.

Determine To-Hit Number

New combat modifiers have been included on the Advanced Combat Modifiers Table.

ADVANCED COMBAT MODIFIERS TABLE

RANGE MODIFIERS

Range	Modifier
Short	+0
Medium	+2
Long	+4
Extreme	+6

TARGET MOVEMENT MODIFIER[1]

Target's Available MP	Modifier
0–2	+0
3–4	+1
5–6	+2
7–9	+3
10–17	+4
18+	+5

TERRAIN MODIFIERS[2]

Terrain	Modifier
Depth 1 Water	+1[3]
Heavy Industrial Zone	+1
Jungle, Light	+1
Jungle, Heavy	+2
Jungle, Ultra-Heavy	+3
Woods, Light	+1
Woods, Heavy	+2
Woods, Ultra-Heavy	+3

ENVIRONMENTAL MODIFIERS

Type	Modifier
Blizzard	+2
Blowing Sand	+2
Dusk/Dawn	+1
Space/Atmosphere Interface	+2[23]
Fog	+1
Geyser	+2
Moonless Night	+3[15]
Night	+2[15]
Pitch Black	+4[15]
Rainfall, Torrential	+2
Rainfall, Light, Moderate, Heavy	+1
Smoke, Light	+1
Smoke, Heavy	+2
Snowfall, Sleet	+1[26]
Winds, Storm	+2
Winds, Strong Gale	+1

MISCELLANEOUS MODIFIERS

Attacker	Modifier
Capital Weapon vs. Small Target	+5[28]
Surface-to-Surface Fire (Capital Artillery Attack)	+9
Sub-Capital Weapon vs. Small Target	+3[28]
Evasive Maneuvers (Aerospace)	+2[18]
Fire Control Hit	+2[5]
Flak Special Ability (see p. 349)	–2[6]
Firing Through Atmosphere	+2[16]
In Freefall	+2[17]
Direct-Fire Artillery	+4
Indirect-Fire Artillery	+7
IndustrialMech	+1[7]
Drone	+1
Ground Element in Zero-G	+4
Landed This Turn	+3[27]
Landing on the Hull (Enemy)	+5
Landing on the Hull (Friendly)	+3
Making Anti-'Mech attack	+4
Overheated	+ Heat Level [1–4]
Spotting for Indirect Fire	+1[9]
Support Element	+2[8]
Has LPRB, PRB or BH	–1[25]
Affected by EMP Mine	+2
Is Grounded DropShip	–2

ATTACK TYPE MODIFIERS

Type	Modifier
Altitude Bombing	+3
Artillery (Direct-Fire)	+4[22]
Artillery (Indirect-Fire)	+7[29]
Artillery (Homing)	Special[19]
Attacking Indirectly	+1[4]
Dive Bombing (including VTOLS)	+2
Grappling	+0
Strafing (including VTOLS)	+2
Striking	+2
TAG	+0

PHYSICAL ATTACKS MODIFIERS

Type	Modifier
Charge	+2
Death From Above	+3
Melee Physical Attack	+1
Standard Physical Attack	+0

ADVANCED COMBAT MODIFIERS TABLE, CONTINUED

TARGET TYPE MODIFIERS

Target Element Type	Modifier
Aerospace Element	+1/+2/+0[10]
Airborne VTOL or WiGE	+1
Battle Armor	+1
Grounded DropShip	–4[11]
Jump Capable	+1
Dropping from High Altitude	+4
ProtoMech	+1
Grounded Small Craft	–1[30]
Grounded Aerospace Element	*[31]
Large Support Element	–1
Very Large Support Element	–2
Super Large Support Element	–3
Mobile Structure	–4

TARGET MODIFIERS

Target	Modifier
Evading (Ground)	
Wet Behind the Ears	+1
Really Green	+1
Green	+1
Regular	+2
Veteran	+3
Elite	+3
Heroic	+4
Legendary	+4
Evasive Maneuvers (Aerospace)	
Fighter	+3
Fighter Squadron	+2
Small Craft	+3
DropShip	+2
DropShip Squadron	+1
WarShip	+1
Has Point Defense Special Ability	+1[14]
Has Mimetic Armor	Varies[24]
Has Stealth Armor	Varies[12]
Fighter or Fighter Squadron	+5/+3[20]
Landing on Hull	+2[21]
Shutdown/Immobile	–4[13]

[1]Modifier is based on available MP modified by heat level and critical hits if applicable. MP expended are irrelevant. Does not apply to aerospace Elements.
[2]Applies when target occupies a hex with the indicated terrain type.
[3]Does not apply if attacker is submerged.
[4]If the spotting Element makes a weapon attack in the same turn as it spots, apply this modifier to the indirect attack(s) as well.
[5]May apply multiple times. Does not apply to physical attacks.
[6]Applies for ground-to-air attacks against airborne aerospace, VTOL and WiGE targets only.
[7]Disregard if the IndustrialMech has the Advanced Fire Control (AFC) special ability (see p. 345).
[8]If Support Element has basic fire control, replace with +1 modifier. If Support Element has advanced fire control, replace with +0 modifier.
[9]Not cumulative with the modifier for attacking indirectly.
[10]Applies to all aerospace Elements that are airborne or in space. Apply an angle of attack modifier as follows: Attacks against the Nose(+1), Sides (+2), or Aft (+0).
[11]Also considered immobile, but do not apply an additional -4 for this. Apply an additional –2 for physical attacks.
[12]Battle armor targets: Add +1 at short and medium ranges. Add +2 at long range. All others: +0 at short range, +1 at medium range and +2 at long range.
[13]Includes buildings, grounded DropShips, hexes and woods. Shutdown Elements do not get a target movement modifier. Grounded DropShips do not get an angle of attack modifier.
[14]+1 per Point Defense System to a maximum of +4 against capital missiles only.
[15]For Elements without the Searchlight (SRCH) special ability (see p. 352). Also applies if the attacker or target are in Depth 10 water or deeper.
[16]Per hex, thus an orbit-to-surface attack adds +8. Sub-Capital weapons add an additional +2 (once, not per hex).
[17]Include the +3 modifier for jumping in addition to this modifier.
[18]Only DropShips and WarShips may make attacks when engaged in evasive maneuvers.
[19]Hits on a 2D6 roll of 4+ if TAG roll is successful.
[20]Applies when attacker is using capital-scale/sub-capital scale weapons.
[21]Target gets half (round down) of its normal MV for its target movement modifier. Roll 1D6 for every attack. On a result of 1, the attack strikes the Hull Element instead.
[22]Do not include modifiers for terrain, target movement or Immobile targets on this type of attack.
[23]Applies to all shots into, out of or through the space/atmosphere interface, except for orbit-to-surface attack.
[24]See Mimetic Armor System (MAS) special ability, p. 350.
[25]Only applies if the target is within the probe's range.
[26]Automatically imposes the environmental condition Cold.
[27]Applies only to Elements landing on the battlefield using the Dropping Troops rules (see p. 313).
[28]Applies to a capital weapon attack (+5) or sub-capital weapon attack (+3) against aerospace fighters, aerospace fighter squadrons, Small Craft or Satellites.
[29]Do not apply any other modifiers from this table, but do apply modifiers from the Artillery Modifiers Table, p. 286.
[30]Grounded Small Craft do not get an angle of attack modifier.
[31]Grounded aerospace fighters, conventional fighters, size class 1 & 2 fixed-wing support elements, and size class 1 & 2 airships do not get an angle of attack modifier, but instead get a target movement modifier as if they had a MV equal to 1/2 their TP (rounded down).

Roll To Hit

No changes have been made.

Determine and Apply Damage

Damage for capital weapons, minefields, orbit-to-surface attack and nuclear weapons has been added.

Roll For Critical Hits

Critical hits have been introduced for new Element types: Satellites, Space Stations, Very Large blue water Naval Vessels and WarShips. Floating critical hits have been added.

Lucky Critical Hits (Optional): Any time a to-hit roll in *BattleForce* (whether on the ground or in space) gets a 12, there is a chance for a lucky critical hit. If the attack itself normally gains

EXPANDED CRITICAL HITS TABLE

2D6 Roll	'Mech*	ProtoMech	Vehicle††	Aerospace†	DropShips‡	JumpShips**
2	Ammo Hit	Weapon Hit	Ammo Hit	Fuel Hit	KF Boom Hit	Door Hit
3	Engine Hit	Weapon Hit	Crew Stunned	FCS Hit	Docking Collar Hit	Dock Hit
4	FCS Hit	FCS Hit	FCS Hit	Engine Hit	No Critical Hit	FCS Hit
5	No Critical Hit	MP Hit	FCS Hit	Weapon Hit	FCS Hit	No Critical Hit
6	Weapon Hit	No Critical Hit	No Critical Hit	No Critical Hit	Weapon Hit	Weapon Hit
7	MP Hit	MP Hit	No Critical Hit	No Critical Hit	Thruster Hit	Weapon Hit
8	Weapon Hit	No Critical Hit	No Critical Hit	No Critical Hit	Weapon Hit	Thruster Hit
9	No Critical Hit	MP Hit	Weapon Hit	Weapon Hit	Door Hit	No Critical Hit
10	FCS Hit	Proto Destroyed	Weapon Hit	Engine Hit	No Critical Hit	K-F Drive Hit
11	Engine Hit	Weapon Hit	Crew Killed	FCS Hit	Engine Hit	Engine Hit
12	Head Blown Off	Weapon Hit	Engine Hit	Crew Killed	Crew Hit	Crew Hit

*Roll 2D6 twice for IndustrialMechs. Apply both critical hits.
**Includes Warships, Satellites and Space Stations.
†Includes Fixed-Wing Support Elements, Airships and conventional fighters.
†† Includes non-aerospace Large, Very Large and Super Large Support Elements, and Mobile Structures.
‡Includes Satellites and Small Craft.

a chance for a critical hit, this chance is in addition to that one. For example, an attack that strikes commercial armor, damages structure and gets a 12 for its to-hit roll would get 3 critical hit chances.

Expanded Critical Hits: The Expanded Critical Hits Table lists all the Element types that can take critical hits. Descriptions for critical hits that did not appear in *BattleForce: Standard Rules* follow.

New/Expanded Critical Hits

The nature and effect of each critical hit is described below:

Crew Hit (JumpShips, Space Stations and WarShips): The first Crew hit adds a +1 modifier to all shots. The second Crew hit adds another +2 (for a total of +3). The third Crew hit adds yet another +2 (for a total of +5). The fourth Crew hit eliminates the Element.

Crew Hit (Satellites): Treat this as Crew Killed if the Satellite has a crew. The Satellite is eliminated from the game. If the Satellite does not have a crew, this hit has no effect.

Crew Hit/Killed (Robotic Control): The first Crew hit to an Element is ignored. Any additional hits are applied as normal for the Element type.

Crew Killed (Large, Very Large and Super Large Support Elements): Treat this as a Crew hit instead. The first hit adds a +1 modifier to all shots. The second Crew hit adds another +2 (for a total of +3). The third Crew hit adds yet another +2 (for a total of +5). The fourth Crew hit eliminates the Element.

Crew Killed (Mobile Structures): The gunnery crew for that hex of a Mobile Structure is eliminated. No weapons in that hex may be fired for the remainder of the game. Other hexes are unaffected.

Dock: Each Docking Hardpoint hit reduces an Element's DropShip Transport (DT) rating by 1.

Docking Collar: An Element with a Docking Collar hit may not dock with a Space Station, JumpShip or WarShip.

Engine Hit (Large, Very Large and Super Large Support Elements): Roll 2D6 for each hit. On a result of 2-7, ignore the hit. On an 8+, reduce the Element's MP by 1.

Engine Hit (Mobile Structures): This critical hit has no effect on Mobile Structures.

K-F Boom: While an Element with a damaged K-F boom may still dock with Space Stations, JumpShips and WarShips, it may not travel through hyperspace. If any transported Elements have damaged K-F booms, the JumpShip/WarShip may not attempt a jump.

K-F Drive: Each hit to a K-F drive reduces the drive integrity by 2 points. If the K-F drive integrity is reduced to zero, the Element may not execute a hyperspace jump. This hit has no effect on Satellites and Space Stations.

MP Hit (Mobile Structures): MP hits have no effect on Mobile Structures.

Weapon Hit (Large, Very Large, Super Large Support Elements, DropShips, Space Stations, WarShips, and Mobile Structures): Multiply one randomly determined attack type in one randomly determined arc (which may be a turret) by 0.75 and round down.

ARTILLERY

BattleForce uses two types of artillery: direct-fire and indirect-fire. Both always target hexes, but never get a –4 to-hit bonus for targeting an immobile Unit or Element. Both are made in addition to any other attacks to which the Element is entitled. Direct-fire attacks represent the artillery Unit attacking a target of opportunity within 6 hexes of it. No Command Points need be spent for direct-fire attacks. The base to-hit number for a direct-fire attack is the Skill Rating of the artillery Element, modified per the Advanced Combat Modifiers Table for a short-range attack against the hex (do not include target movement or immobile target modifiers).

Indirect-fire attacks represent fire for effect or suppression

requested by a Unit in the field. The controlling player designates one or more target hexes per artillery weapon in the artillery Unit. There are three types of indirect-fire artillery attacks: Standard, Homing and Cruise Missile. These attacks cost 2 Command Points per artillery Unit regardless of the number of Elements in the Unit, the number of attacks made, or the number of targets chosen. The point cost represents the additional chatter on command frequencies and relaying of targeting coordinates. Indirect attacks may not be made against targets adjacent to the artillery Element. Points are spent and target hexes for these attacks are chosen during the Command Phase.

Depending on the distance from the artillery Element, an artillery attack may be resolved in the same turn or in a later turn. If the target hex is within 17 hexes of the artillery Element, resolve the attack in the same turn. If the target is more than 17 hexes from the artillery Element, consult the Artillery Flight Time Table to determine when to resolve the attack.

At the beginning of the Combat Phase (in the appropriate turn), the targets are revealed and the attacks are resolved. Multiple attacks may target the same hex. Artillery attacks are subject to additional modifiers as shown on the Artillery Modifiers Table. Regardless of modifiers, once an artillery Element successfully hits a target hex it may continue to do so automatically for the rest of the game.

Artillery ranges are given in *BattleForce* mapsheets and *BattleForce* hexes. The hex ranges are optional for everything except the artillery cannon, and more accurately translate *Total Warfare*-scale ranges to *BattleForce*-scale. The mapsheet ranges have been rounded, and while simpler to use, are a less-accurate conversion. Players may use either, but all players must use the same method to determine artillery range.

Spotters: If a friendly Element has LOS to the target hex, it may provide bonuses as shown on the Artillery Modifiers Table. Most modifiers require the friendly Element to have LOS when the attack is launched, not necessarily when it is resolved. To provide a modifier for successive shots at the same target hex, the spotter must have LOS to the hex when the attack is resolved. Just as with spotting for indirect-fire LRMs, if the spotter makes an attack in the round in which it spots, apply a +1 to-hit modifier to the spotter's attack.

Pre-Plotted Artillery Targets: Prior to the start of play, players may agree on a certain number of pre-plotted hexes per mapsheet. These hexes may automatically be hit by their artillery Elements. The recommended number of pre-plotted hexes per mapsheet is 5. Players may adapt this number to the size of their playing area, but no more than 5 hexes per mapsheet (or 17-hex area) should be pre-plotted. One option is to use the Force's Battlefield Intelligence Rating for the number of hexes

Standard Artillery Attacks

Target hexes are designated by writing down the hex numbers (or otherwise secretly noting the target location) and corresponding flight times on a piece of paper.

Standard attacks are area-effect weapons that damage every Element in the hex in which the attack lands as shown on the Artillery Range and Damage Table. If the damage entry consists of numbers separated by slashes, the leftmost number indicates damage to the target hex, and each number to the right of that indicates damage in every adjacent hex.

Missed shots scatter like an Altitude Bombing attack where Direction 1 is away from the attacking Unit. If this falls between two hexsides, randomly choose one. Missed shots from artillery cannons scatter half the normal distance.

ARTILLERY MODIFIERS TABLE

Situation	Modifier
Each successive shot at the same target hex*	–1
Friendly Element acting as spotter	–1
Spotter has LPRB, PRB or BH	–2
Spotter has Recon†	–1

*Applies only if a spotter has LOS to the target hex in the turn in which the attack is resolved.

†Do not apply this modifier if the spotter has LPRB, PRB or BH.

Homing Missiles

Homing missiles damage a single target Element as shown by the numbers in parentheses on the Artillery Range and Damage Table. If a parenthetical number does not appear in the Damage column, that weapon may not fire homing missiles. Unlike standard artillery attacks, missed homing-missile shots detonate harmlessly.

When a homing missile is fired, it is aimed at a mapsheet (or 17-hex area), not an individual hex. The controlling player designates the firing hex—the hex occupied by the attacking Element during the turn in which it makes an attack. He also writes down the Element's facing, the target area for the missile (which must be within the attacking Element's firing arc) and the flight time. As with standard artillery attacks, this information should be recorded secretly and revealed when the attack is resolved.

During the Combat Phase of the turn in which the attack is resolved, a target Element must be designated by TAG. This process is called painting a target. To do this, an Element with the Target Acquisition Gear (TAG) or Light TAG (LTAG) special ability (see pp. 353 and 350, respectively) makes a TAG attack. This attack is in addition to any other attacks to which the Element is entitled, and the target need not be the same one engaged by the Element's weapon or physical attacks.

The target Element must be in TAG (or LTAG) range and all normal modifiers as shown on the Advanced Combat Modifiers table apply. If the TAG attack fails, another Element may make a TAG attack against the same target or a different target as long as the target is on the same mapsheet (or in the same 17-hex area). This continues until all eligible Elements have made a TAG attack or until targets are painted for all homing missile attacks being resolved within the area.

If multiple homing missile attacks are being resolved in the current turn, resolve all the TAG attacks first. The attacker then decides which missiles will strike each successfully painted target. Multiple missiles may hit the same target, or each may hit a separate target, but each painted target must be struck by at least one missile. If the TAG attack is successful, roll 2D6 for each missile homing in on the target. On a result of 4+ the target is struck by the homing missile; on a 3 or less, the missile detonates harmlessly without striking the target.

ARTILLERY RANGE AND DAMAGE TABLE

Artillery Type	Range in BF Maps	Range in BF Hexes	BF Damage
Arrow IV (IS)	3	45	3(2)
Arrow IV (Clan)	3	51	3(2)
Thumper	7	119	3
Sniper	6	102	3
Long Tom	10	170	5/1
Cruise Missile/50	17	283	8
Cruise Missile/70	30	510	11/2
Cruise Missile/90	40	680	16/6
Cruise Missile/120	50	850	22/14
Thumper Cannon	—	5	1
Sniper Cannon	—	4	1
Long Tom Cannon	—	6	3

ARTILLERY FLIGHT TIME TABLE

CRUISE MISSILES

Range	Resolve the Attack in … turns
In *BattleForce* mapsheets	1 + (range in mapsheets/1.67) rounded down
In *BattleForce* hexes	1 + (range in hexes/28.34) rounded down

ALL OTHERS

BF Maps	BF Hexes	Resolve the Attack
1	1–17	Immediately
2–3	18–45	1 turn later
4–5	46–85	2 turns later
6–7	86–119	3 turns later
8–9	120–147	4 turns later
10	148–170	5 turns later

Cruise Missiles

These attacks are resolved like standard attacks, except that cruise missiles have a different flight time.

Flight Time

The Artillery Flight Time Table shows the number of turns before an artillery attack will reach its destination hex or area.

Lara has a lance of Long Tom artillery Elements, all with Skill Rating 3. During the Command Phase of Turn 2, Lara spends one Command Point and selects Hex 1009 as her target hex. Counting the range to her artillery Unit, Lara determines that her Unit is 6 hexes from Hex 1009, and so the attack will be resolved in the current turn. After movement is complete, one Unit is in Hex 1009.

Consulting the Advanced Combat Modifiers Table, Lara determines that she will need to get a 9 or better on each artillery Element's to-hit roll to hit Hex 1009. She makes 4 rolls and gets 11, 11, 8 and 12. Three of the four attacks land on target. Each Element in Hex 1009 takes 5 points of damage from each attack, for a total of 15 points of damage.

Lara must also determine where the shot that missed will land. Rolling 1D6, she gets a 2 for direction. Her second roll for distance nets a 4. The missed shot lands in Hex 1407.

LARGE, VERY LARGE AND SUPER LARGE SUPPORT VEHICLES

Similar to DropShips, these Elements may make one or more attacks into each arc as shown by their respective templates. The arcs are Front, Left Side, Right Side and Aft. They may also make an additional attack with each turret. For simplicity, each turret has a 360-degree firing arc. Area-effect weapons—regardless of type—do not damage multiple hexes of these Elements. Regardless of how many hexes fall within the area, the Element only takes damage once. These Elements may be the target of a boarding attack by infantry (see *Boarding and Repelling* p. 290).

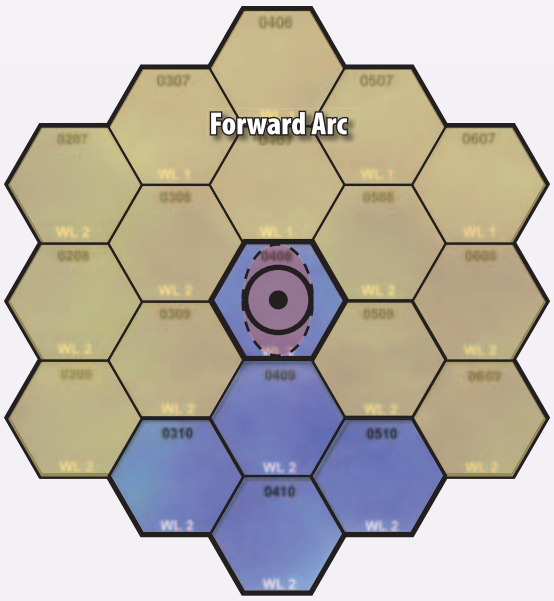
MINEFIELDS

A minefield is a single mined hex. Except for weapon-delivered minefields, the rules are generally the same for all types of minefields. Prior to the start of play—as dictated by the scenario—players may secretly place minefields by listing the location of mined hexes on scrap paper. Minefields are hidden area-effect weapons, and like artillery strikes, damage all ground Elements in the hex when they explode. Airborne aerospace Elements, VTOLs and WiGEs 2 or more levels above the mined terrain are not affected by minefields.

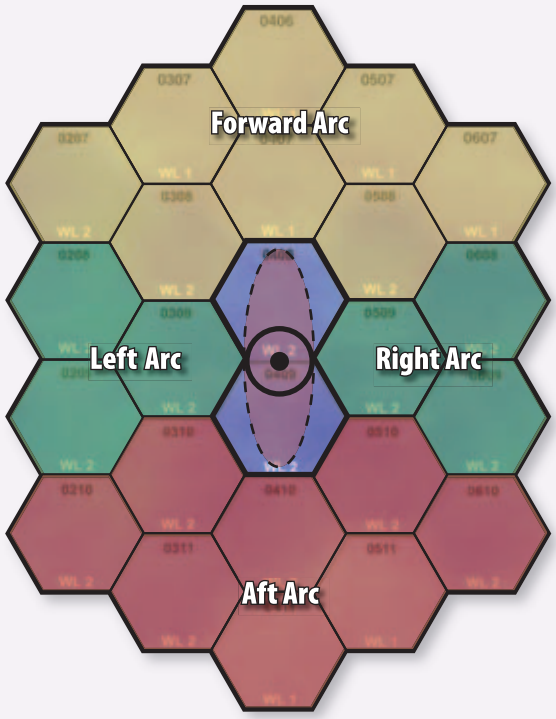
Minefields have a density rating between 1 and 5. The damage inflicted by a minefield is equal to its density rating unless otherwise stated. Additionally, whenever a minefield explodes, its density rating is reduced by 1. When a minefield's density rating equals zero, it is removed from play. Aside from the command-detonated type, minefields may only explode when an Element enters the minefield. Elements may exit a minefield without fear of detonation.

Active: Active minefields work identically to conventional minefields, except that they may also explode when Elements jump over them. Roll 2D6. On a result of 9 or better, the minefield explodes and damages the jumping Element immediately during the Movement Phase. Only Elements using Jumping MP are targeted in this fashion; e.g. VTOLs will not set off active minefields. Elements using ground movement to enter an active minefield check for detonation as if they'd entered a conventional minefield.

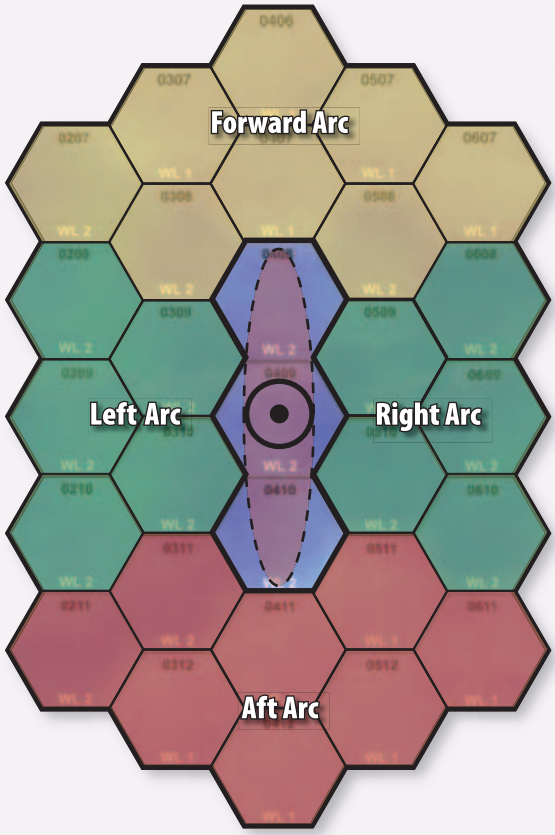
Command Detonated Minefields: During the Command Phase, the acting player may spend 2 Command Points to set



• LARGE SUPPORT VEHICLE FIRING ARCS — TEMPLATE A •



• VERY LARGE SUPPORT VEHICLE FIRING ARCS — TEMPLATE B •



• SUPER LARGE SUPPORT VEHICLE FIRING ARCS — TEMPLATE C •

off a command-detonated minefield. Damage takes effect immediately, and destroyed Elements are removed before play continues. Each detonation reduces the minefield density by 1. Command-detonated minefields may not be detonated by Elements entering the hex.

Conventional Minefields: Whenever a ground Element enters a hex containing a minefield, roll 2D6. If the number is equal to or greater than the target number shown on the Conventional Minefield Table, the minefield explodes. Apply a –1 modifier if the Element(s) entering the hex are infantry or battle armor and a –2 modifier if the Element(s) entering the hex are hovercraft or WiGEs.

EMP Minefields: Electromagnetic-pulse minefields may only detonate once per game (per hex). The detonation creates a temporary 1-hex hostile ECM field, disrupting any systems affected by ECM until the end of the current turn. An Element affected by an EMP minefield suffers a +2 to-hit modifier for 3 turns. Elements that track heat also increase their heat level by 1. Elements that do not track heat take 1 point of damage.

Inferno Minefields: Inferno minefields increase the heat level for every 'Mech Element (or landed aerospace fighter Element)

CONVENTIONAL MINEFIELD TABLE

Density	Target Number
5	5+
4	6+
3	7+
2	8+
1	9+

in the target hex by their density rating to a maximum of 2 points. Against vehicle Elements roll for a number of critical hits equal to the minefield's density rating. Against Proto-Mechs and Battle Armor the minefield does double its density rating in damage. Any non-battle armor infantry Elements are destroyed by inferno minefields. Inferno minefields may be deployed in land and water hexes but must be placed on the surface in water hexes.

Vibrabomb Minefields: Vibrabomb minefields are set to a specific size/weight class (from 1-5) and explode automatically when Elements matching that size/weight class enter the hex. An Element below the specified size/weight class can move through the hex safely. An Element over the specified size/weight class sets off the vibrabombs when it approaches within a number of hexes of the minefield equal to the amount by which it exceeds the minefield's setting. For example, an assault 'Mech—Weight Class 4—approaches a vibrabomb minefield set for Size/Weight Class 2. The minefield will detonate when the 'Mech is 2 hexes away from it.

Sea-Based Minefields: Minefields may be deployed in water hexes both on the bottom of the hex or suspended so that they float at any depth level. For example, a conventional minefield may be placed at Depth 3 in a Depth 5 water hex. Only Elements attempting to move through the minefield at the same depth as the mines need to check for detonation. Any mine-type may be deployed in water (inferno mines may only be deployed on the surface of the water). Weapon-delivered mines always sink to the bottom of the water hex.

Weapon-Delivered Minefields: Artillery Units and any Element with the indirect-fire ability may fire special munitions to create weapon-delivered minefields. Unlike most minefields, weapon-delivered minefields are clearly visible. They generally function like a conventional minefield of the same rating. An appropriate counter should be placed in any hex mined in this fashion.

To create a weapon-delivered minefield with the Indirect Fire ability, the player simply nominates a target hex within range and makes an attack as if shooting directly at the hex; LRM and MML attacks include the –4 to-hit modifier for immobile targets, artillery attacks resolve as normal. If the attack misses, the minefield scatters like a dive-bombing attack. Indirect-fire minefields may also be set using indirect-fire rules. Regardless of the method used, this type of weapon-delivered minefield has a density equal to the IF rating of the Element setting the minefield.

Weapon-delivered minefields may also be placed using special artillery munitions. The process is the same as making an artillery attack against the target hex. The minefield has a density rating equal to the damage done by the artillery piece. A Long Tom will create a minefield with a Density of 5 in the target hex and a Density of 1 in every adjacent hex. Cruise missiles may not be used to create weapon-delivered minefields.

Multiple weapons may combine to create a more powerful weapon-delivered minefield, but the maximum density of any minefield is 5. Any more weapons added to the hex have no effect.

Mine Dispenser: Elements with the Mine Dispenser ability may create minefields in any hex through which they travel. The density of the minefield is equal to the Element's MDS rating. Unlike weapon-delivered minefields, these minefields are hidden. Any type of mine may be deployed using a mine dispenser.



A column of fire and smoke marks the death of a tank.

Space Mines: Prior to play, conventional minefields may be created in a space hex. During play, they may be created by a screen launcher. Space minefields created by screen launchers have a density equal to the screen rating of the Element launching them up. Space mines created prior to play are hidden, those created by a screen launcher are not. Multiple Elements may combine to create larger space minefields, but the maximum density of the minefield is 5. Any more weapons added to the hex have no effect.

An Element entering a mined space hex rolls 2D6. On a 9+ the minefield detonates. Damage from a space minefield is equal to the density of the minefield times one-half (rounded down) of the Element's weight/size class. Each multiple of damage done this way reduces the minefield's density. For example, a *McKenna* WarShip detonating a Density 5 minefield would take 10 points of damage. As the minefield did double its density in damage, its density would be reduced from 5 to 3.

Locating Minefields

Other than blundering into them, minefields can also be located by an Element with the Active Probe, Light Active Probe or Bloodhound special abilities. At the end of the Element's movement, any minefields within range are automatically revealed.

Clearing Minefields

There are two ways to clear a minefield: with conventional infantry or a minesweeper.

Conventional Infantry: Conventional infantry Elements may automatically disable a minefield. To do this, the controlling player states—during the Command Phase—that the infantry Element is searching for mines. If any are present, they are automatically deactivated. The infantry Element may not move, attack or execute orders this turn.

Minesweeper (MSW) Special Ability: An Element with a minesweeper automatically clears any minefields in the hex it occupies at the end of the Movement Phase. During the turn it clears a minefield, an Element may take no actions aside from expending MV.

MOBILE STRUCTURES

Each exterior hex of a Mobile Structure has firing arc, as shown below. Mobile Structures may make one attack per turn from each exterior hex, plus an additional attack with each turret. These Elements may be the target of a boarding attack by infantry (see *Boarding and Repelling*, at bottom right).

To destroy a Mobile Structure, all the hexes of an "interior" row must be eliminated. This may require player adjudication to resolve whether a Mobile Structure is destroyed.

AEROSPACE ATTACKS

The following section describes additional advanced rules governing aerospace attacks.

Arrow IV Missiles

Arrow IV missiles may be carried by aerospace, conventional fighters, and fixed-wing support Elements; see Alternate Munitions, p. 308.

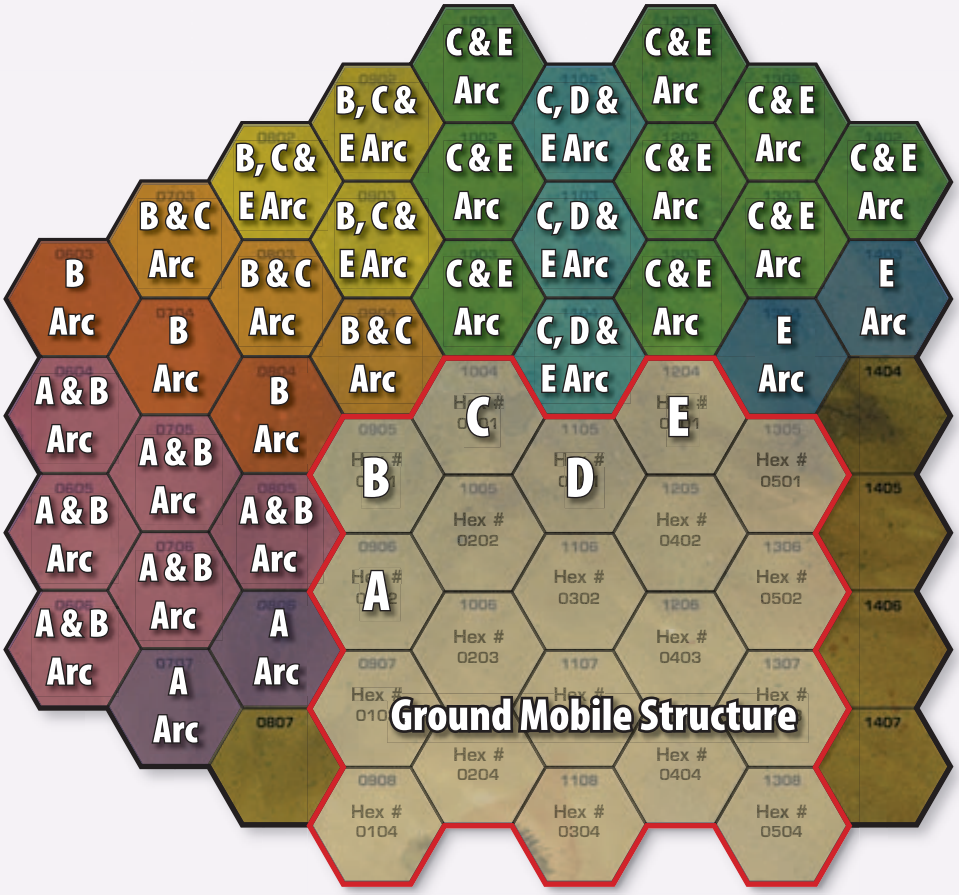
VTOL Bombers

Similar to aerospace and conventional fighters, VTOLs may be outfitted to carry bombs. However, the rules for making bombing attacks with VTOLs differ greatly from those for the other Elements:

- VTOLs may not carry Arrow IV missiles as bombs.
- VTOLs may use their cargo space to carry 1 bomb per two full tons of cargo space, to a maximum of 2 bombs.
- Each bomb carried reduces a VTOL's MV by 1.
- The attack is resolved like a dive-bombing attack by an aerospace or conventional fighter, including scatter and damage; however, the VTOL does not need to "dive" to perform this attack.

VTOL Strafing

VTOLs may make strafing attacks following the rules used for aerospace and conventional fighters.



• MOBILE STRUCTURE FIRING ARCS •

BOARDING AND REPELLING

Only Large, Very Large and Super Large Support Elements, DropShips, JumpShips, Space Stations and WarShips may be the target of boarding actions. *BattleForce* uses the boarding and repelling process as described in *Tactical Operations* (see pp. 199-207), with a few modifications. When determining Marine Points for each side, these Elements must divide their crews into 25-percent increments, not 17-percent increments as in *Tactical Operations*. Using crew to defend against a boarding attack imposes penalties as described by the Crew Hit critical hit in *BattleForce*, not the +1 to-hit modifiers described in *Tactical Operations*. Any references to Piloting Skill rolls in *Tactical Operations* do not apply. Boarding actions do not inflict damage to structure. Use the following Crew Casualties Table instead of the one in *Tactical Operations.*

CREW CASUALTIES TABLE

Percentage of Crew Casualties	Crew Hits
5–25	1
26–50	2
51–75	3
76+	4

DOCKED ELEMENTS

The following rules cover docked Elements.

Attacking While Docked

A docked Element may engage most targets as normal. It is assumed to have the same facing as the largest Element involved in the docking operation. However, it may not use the arc corresponding to the facing that is docked.

Attacking a Docked Element

Attacks against a group of Elements engaged in docking operations (or successfully docked) must target the largest (use *Total Warfare* stats to determine mass) of the Elements involved. Roll 1D6 for each attacking Element after attacks are declared, but before shots are resolved. If the result is a 1, resolve the attacking Element's shots against a randomly determined docked Element (other than the largest Element).

GRAPPLING

A grappling attack is a necessary precursor to boarding and repelling. To make a grappling attack, the attacking Element (which must be a small craft) must end its movement in the same hex as its target. It must also match heading (but not facing, if the advanced movement rules are in play) and velocity. Aerospace fighters (unless adrift) may not be targeted by a grappling attack, but all other Elements are fair game. The to-hit number for a grapple is an unmodified 8. If the attack is successful, roll 1D6 to randomly determine the location of the attacker: 1 Nose; 2 Left-Front/Left-Wing; 3 Right-Front/Right-Wing; 4 Left-Aft/Left-Wing Aft; 5 Right-Aft/Right-Wing Aft; and 6 Aft. Up to 4 Elements may grapple a larger target, but each must be in a different location (re-roll as necessary when determining locations).

The grappling (attacking) aerospace Element may make weapons attacks while engaged in grappling. The defending Element may make weapons attacks using any arc other than the arc where the grappling occurred. In the End Phase of any turn with an Aerospace Space Movement Phase, the grappling Element may disconnect. This happens immediately once declared.

Attacking a Grappling Element

To attack a grappling Element, the attacker must have LOS to the Element, and that LOS cannot pass through the grappled Element. For example, an attacker on the front-left side of a DropShip could not attack a grappling Element on the aft-right side of the DropShip as its LOS would pass through the DropShip.

Attacking a Grappled Element

All attacks against a grappled Element may strike the grappling Element if the attack is striking the grappled Element through the hexside containing the grappling Element. To determine if this happens, roll 1D6. On result of 6 apply damage to the grappling Element, otherwise apply damage to the grappled Element.

Severing a Grapple

If the grappled Element changes velocity the grappling Element must make a new grappling attack to maintain its grapple. Add a +1 modifier for every full 2 points of velocity change.

GROUND UNITS IN ZERO-G COMBAT

Some ground Elements are capable of fighting in a zero-G environment (see *Ground Units in Zero-G Operations*, p. 279). Use the Unit's normal firing arc with the rear arc aligned to the hexside opposite its heading.

Any attacks made by these Elements against targets in motion suffer an additional +4 to-hit modifier as shown on the Advanced Combat Modifiers Table (see p. 283). Every hit scored against these Elements has a chance for creating a critical hit as if the Element were under water. If all the Element's armor is destroyed, the Element is destroyed.

LANDING ON THE HULL

The idea of this attack is to land a Force on the surface of a large Element—inside the range of its guns—and inflict considerable damage. Valid targets (hereafter called hull Elements) are Large, Very Large and Super Large Support and Transport Elements, Mobile Structures, DropShips, JumpShips, WarShips and Space Stations. Any number of Units may attempt landing on the hull up to the stacking limit for the hex, if applicable. All Elements of a Unit must attempt landing on the hull, unless they are split or detached. A separate roll is made for each Element. If some but not all Elements succeed, the ones that succeed are automatically detached (see *Separating Elements*, p. 322). There is no Command Point cost for Elements detached in this fashion.

If the attack is successful, the Element is considered landed and remains on the hull until displaced or destroyed. In the Combat Phase of subsequent turns, it may attack the hull Element, automatically doing its short-range damage (which may be augmented by overheating) and its physical attack damage, if applicable. Alternatively, it may engage other landed Elements (see below). The attacker may also voluntarily disengage by moving away in the Movement Phase of any turn. If the attack is unsuccessful the effects vary depending upon where the attack takes place (see below).

So long as the attacker is landed, the hull Element may not fire on it, though other Units may come to its aid (see *Aiding the Hull Element*, p. 292).

On the Ground and in Water: For non-aerospace Elements (and aerospace Elements on the ground), this type of attack requires the attacking Element to have Jumping movement and end its Movement Phase in a hex occupied by the target. If the attack fails, the Element is placed in an adjacent hex of the hull Element's choice. It may not move again this turn, even if it has MV available. The attacker also takes 1 point of damage.

In Space: The attacker must end its movement in the same hex and match heading and velocity with the target. If the attack fails, the Element remains in the hex with the hull Element. It may not make another move this turn, even if it has TP available. The attacker loses 1 point of velocity and takes 1 point of damage.

Aiding the Hull Element

If the hull Element is an aerospace Element in space, a Large or Very Large Support or Transport Element, or a Mobile Structure, friendly Forces (if available) may exit onto the hull and engage the attacker. No roll is required for a Unit exiting in this manner; the controlling player simply states his intent during the Movement Phase.

Friendly Elements may also attempt a hull landing. A friendly hull landing follows the same process as an enemy hull landing, except that the additional modifier is reduced by 2.

Elements may fire at the landed Element as if it had half its normal MV, but with an additional +2 to-hit modifier. Additionally, for every shot at the landed Element, roll 1D6. On a result of 1, the shot hits the hull Element instead.

Engaging the Attacker

When landed Elements engage each other, treat the attack as if it were being made at short range with each Element having half its MV available. Apply all other modifiers as normal.

Displacing the Attacker

Methods for displacing the attacker vary depending on whether the hull Element is in space or on the ground.

On the Ground and in Water: The landed Element is automatically displaced under any of the following conditions:

- The hull Element is a grounded aerospace Element and lifts off. This automatically destroys the landed Element.
- The hull Element is submersible and submerges (unless the landed Element has UMU). If Depth 1+ water is prohibited for the landed Element's type, it is destroyed. Otherwise, the landed Element automatically falls off and sinks to the bottom. This takes place immediately during the Movement Phase.

In Space: The landed Element is automatically displaced if any of the following apply:

- The hull Element slows to a stop or doubles its velocity in one Space Movement Phase.
- The hull Element enters the atmosphere. This automatically destroys the landed Element.



• SATELLITE AND SPACE STATION FIRING ARCS DIAGRAM •

JUMPSHIP ATTACKS

JumpShips use the same firing arcs as Spheroid DropShips in space and suffer critical hits as if they were WarShips.

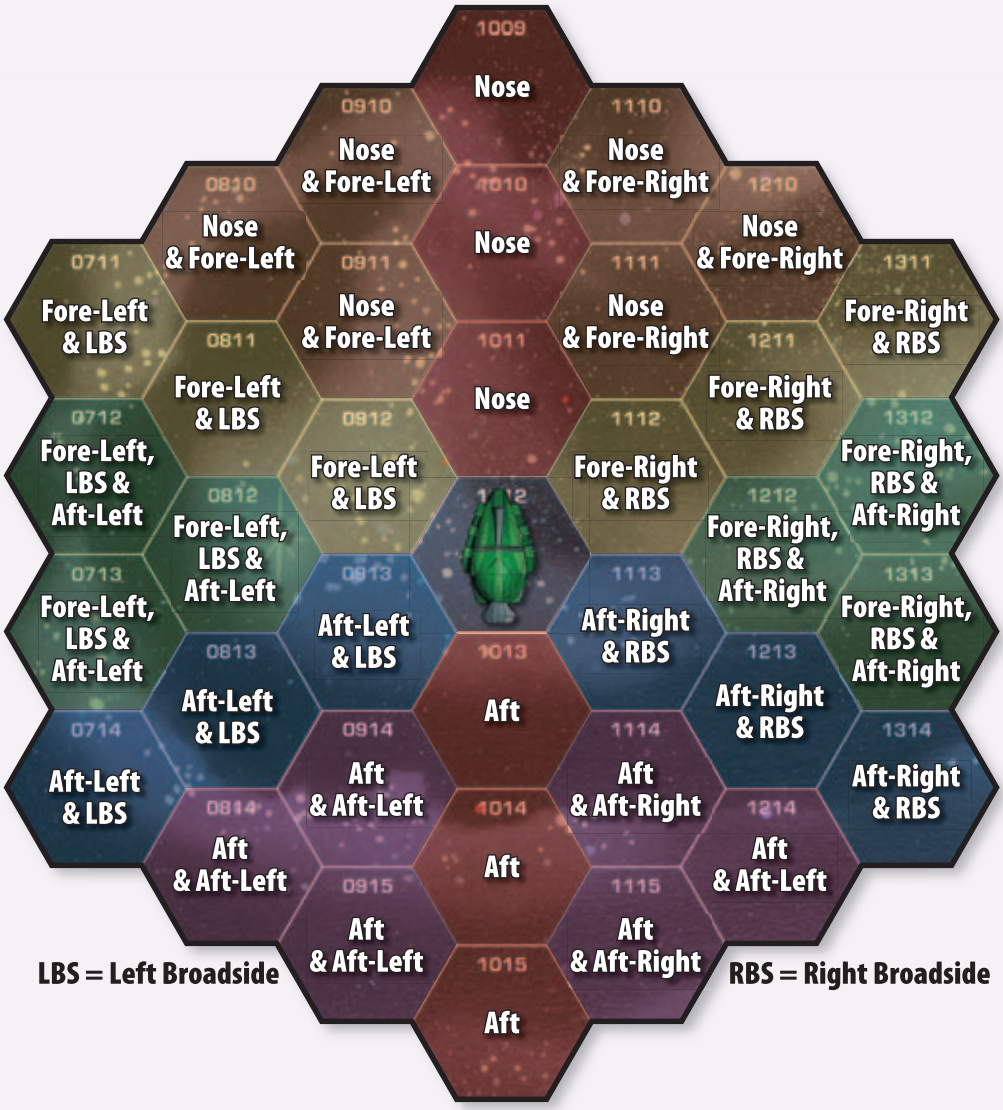
SATELLITE ATTACKS

Satellites have six firing arcs and may make one attack in each arc. They suffer critical hits as if they were aerospace fighters.

SCREEN LAUNCHERS

Elements with the Screen special ability may deploy screen "clouds": a mass of explosive obscurant that fouls sensors and targeting. An Element may deploy one cloud per point of Screen ability. Any hex within short range of the Element may be chosen as the target hex for a screen cloud. Hexes containing a screen cloud block LOS. Attacks into or out of a hex with a screen cloud suffer a +2 to-hit modifier. Multiple clouds are cumulative. During the End Phase of each turn, roll 2D6 for each screen counter. On a result of 7+, remove the counter.

Any Element in the hex where a screen is deployed takes 2 points of damage.



• WARSHIP FIRING ARCS DIAGRAM •

SPACE STATION ATTACKS

Space Stations use the same firing arcs as Satellites, and may make one attack in each arc for each class of weapon they mount (standard, sub-capital, capital or capital missile). Space Stations suffer critical hits as if they were WarShips.

SPACE BOMBERS

Aerospace fighters and squadrons may be fitted with bombs per their bomb rating. These bombs may be used to engage targets in space, using the following rules:

- Only DropShips and larger Elements may be targeted.
- The attacker and target must occupy the same hex or the attacker must have moved through the target's hex during the turn.
- Apply a +2 to-hit modifier and all other modifiers as normal.
- Missed attacks detonate harmlessly.
- Only a single target Element is affected by the bomb. Other Elements in the same hex are never damaged.
- A fighter may "drop" any or all bombs as if making a dive-bombing attack

WARSHIPS

The offensive punch of the Star League Navy, WarShips are the most powerful Element in the *BattleTech* arsenal. In each turn with a Space Movement Phase, a WarShip may choose to engage space or ground targets during the Combat Phase.

Space Combat

In space, a WarShip may potentially make a total of 32 attacks: one capital-scale, one capital missile, one sub-capital and one standard-scale attack for each of its eight firing arcs. Refer to the WarShip Firing Arc Diagram. WarShips may use the optional firing modes described in this book (e.g. bracketing fire—assume 4 weapons per arc, anti-aerospace targeting, and so on)—except for Called Shots Mode—in *BattleForce*; however, any such modifications apply to all the weapons of that scale for the entire arc.

CAPITAL WEAPONS FIRE IN ATMOSPHERE

Capital (and Sub-Capital) weapons may be employed in (or through) the atmosphere in a limited number of scenarios as described in this section.

Orbit-to-Surface Fire

Against ground targets, orbit-to-surface attack is second only to nuclear weapons in destructive power. A ground Unit must spend 10 Command Points per WarShip (per turn) to request an orbit-to-surface attack.

Targets: The attacker may divide the damage for each arc into one or more damage groups for non-missile bombardment. Missile bombardment always uses one damage group. Each damage group may target a single hex, and multiple damage groups may be targeted at a single hex. If a single damage group is chosen, it will take full damage for the arc. If multiple damage groups are chosen divide the damage for the arc by the number of damage groups chosen and round down. The damage value for the respective arc may be divided by any number so long as the result when rounded is at least 2.

For example, an *Agamemnon* does 97 points of damage at Long Range with its broadside capital arc. If fired on a single hex, the target hex would take 97 points of damage. If five damage groups were chosen, the attacking player would divide 97 by 5 and get 19.4 which would round down to 19. Each of the five damage groups could target different hexes which would take 19 points of damage.

The target hexes are chosen when the Command Points are spent, as is the turn during which the bombardment will occur. Additionally, the controlling player must specify which firing arcs the WarShip will use for bombardment, and which attack is targeted at each hex. The chosen turn must be one in which a Space Combat Phase occurs. The WarShip must maneuver so that the ground hex on the High Altitude Map that represents the battlefield is in its firing arc during the turn in which the bombardment takes place. Sometimes the ground hex on the High Altitude Map may not be in enough firing arcs for the WarShip to make all the planned attacks. If this happens, the WarShip may still fire those arcs that have LOS to the ground hex on the map.

Attacks: The base to-hit number for an orbit-to-surface attack is the Skill Rating of the attacking Element plus all applicable modifiers on the Advanced Combat Modifiers Table (see p. 271). Each atmospheric hex (including the ground hex on the High Altitude Map) counts as 2 hexes for purposes of determining range. Unlike artillery attacks, an orbit-to-surface attack is modified for immobile targets, and shots that miss may still strike the battlefield. These shots will scatter 1D6 times the Margin of Failure in a random direction (determined by a 1D6 roll). Refer to the Dive Bombing Scatter Diagram (see p. 235).

Elements with the TAG ability may use it to designate the target hex. In this case, apply a –2 to-hit modifier for the orbit-to-surface attack. Subsequent attacks against the same target hex may benefit from a –1 to-hit modifier as long as a friendly Element has LOS to the target hex during each turn in which an orbit-to-surface attack is resolved.

Capital and Sub-Capital Weapon attacks strike the same turn that they are fired. For Capital Missile attacks, roll 1D6. On a result of 1-3, they strike immediately. On a result of 4-6 they strike in the following turn after the ground movement phase.

Damage: The damage for an orbit-to-surface attack is equal to the damage group selected when the attack was targeted. It is an area-effect attack, and all Elements in the target hex take this damage. All Elements in adjacent hexes also take damage. Multiply the Damage Value for the target hex by 0.50 and round normally to a minimum of 1.

Airborne aerospace Elements above the target hex or adjacent hexes may take damage as well. Roll 1D6 for each Element. On a result of 6, the aerospace Element suffers half the damage done to the underlying hex. Airborne non-aerospace Elements above the target hex or adjacent hexes are automatically hit if they are within 4 levels of the underlying hex (2 levels in adjacent hexes). Reduce the damage dealt to these Elements by half for each level they are at above the underlying hex. Elements 5 levels or more above the underlying hex do not take damage. Multi-hex Elements take damage for each hex in the blast radius of the attack. Orbit-to-surface attack also automatically clears any minefields in hexes that suffer damage from the attack.

Orbit-to-surface attack also damages the hex itself (if Terrain Conversion rules are in play), and buildings do not absorb any damage from orbit-to-surface attack (that is, both the building and any Elements inside take full damage from the orbit-to-surface attack). If the target hex is a water hex, multiply the damage by 0.50 for each depth level (round normally) until the shot strikes the bottom of the water hex. Apply damage normally using that value.

Tim's Free World's League Force is engaged in heavy fighting. Supported by the Agamemnon*-class heavy cruiser* Menelaus*, their victory seems assured. The Menelaus has the following stats:*

Agamemnon

	TP	Capital Damage S/M/L/E	Cap Missile Damage S/M/L/E	Standard Damage S/M/L/E	Size Class	Armor-T/ Structure	Point Value
	4				2	107-11/26	2,012
Nose		113/113/75/11	N/A	12/11/7/0			
FL/FR		68/68/68/11	N/A	12/11/7/0			
LBS/RBS		135/135/97/40	N/A	12/11/7/0			
AL/AR		68/68/68/11	N/A	12/11/7/0			
Aft		107/68/107/11	N/A	12/11/7/0			

Specials: AT18D6, CA66.6D6, CAP, DT4, KF, LF, PNT4, SPC

During the Command Phase of Turn 3, Tim spends ten Command Points and selects targets for an orbit-to-surface attack, choosing their arrival in the first available space combat turn, Turn 6. As Tim expects the Menelaus *to bring her full broadside to bear, he selects Hex 0914 for the FL attack, Hex 0708 for the LBS attack and Hex 1306 for the AL attack. Tim elects not to split his damage in to multiple damage groups.*

First, Tim checks to see if the target mapsheet is within the Menelaus*'s firing arcs. Unfortunately, she was unable to maneuver to bring her full broadside to bear. Her position does allow attacks within the FL and LBS arcs. Hex 1306 is removed from the attack list.*

Next, Tim verifies that the target hex is within range. With the additional range penalties for firing through atmosphere, it's a long-range shot. The Menelaus*'s crew has a Skill Rating of 3. Consulting the Attack Modifiers Table, Tim adds +4 for long range and +8 for firing through atmosphere hexes. He also applies a –4 to-hit modifier for targeting a hex, giving him a final to-hit number of 11.*

Tim gets a 5 on his first to-hit roll—an MoF of 6. His shot at Hex 0914 will deviate. Tim rolls 1D6 to determine the direction of scatter, getting a 6. Next, Tim rolls to determine the distance the shot will scatter. He gets a 1. He multiplies this by his MoF of 6 and finds that the shot will land in Hex 0311 instead, taking 68 points of damage. The FL damage from the Agamemnon *is 68 points, and so the damage done by the orbit-to-surface attack is 34 points (68 x 0.50 = 34). Hexes 0310, 0410, 0411, 0312, 0211 and 0210 each take 34 points of damage. Hexes 0309, 0409, 0510, 0511, 0512, 0412, 0313, 0212, 0112,0111, 0110 and 0209 each take 17 points of damage.*

Now Tim rolls to hit for his LBS attack. He gets a 2—an MoF of 9. His shot at Hex 0708 will also deviate. He rolls a 1 for his deviation direction and a 4 for his multiplier. His LBS shot will deviate in Direction 1 for a total of 36 hexes, landing well off the map.

Airborne-to-Surface Fire

Air Mobile Structures and DropShips with capital missiles or

sub-capital weapons in the appropriate arcs may perform an orbit-to-surface attack from the High Altitude map. The process is the same as an orbit-to-surface attack, except that the modifier for passing through the space/atmosphere interface is not applied.

Surface-to-Orbit Fire (SDS Attacks)

Though quite rare, a few planets in the Inner Sphere are still protected by Space Defense Systems. The SDS system is normally mounted in an installation with a fixed arc relative to a ground hex on the High Altitude Map. This arc is identical to the Broadside arc on a WarShip. However, grounded DropShips, and any other Element capable of mounting SDS weaponry may make Surface-to-Orbit attacks using these rules. An SDS attack costs 6 Command Points per SDS Unit.

Only Missile weapons may be fired underwater, and such attacks suffer an additional +3 to-hit modifier and take one extra turn per full two depths of water between the attacker and the surface of the water.

The base-to-hit for SDS attacks is the Skill Rating of the attacking Element, modified by range, angle of attack, and any other appropriate modifiers from the Advanced Combat Modifiers Table (see p. 271). The weapons use capital-scale ranges and do not suffer to-hit modifiers for firing through the atmosphere or the space/atmosphere interface.

Surface-to-Surface Fire (Capital Artillery)

Only Capital and Sub-Capital missiles may be used for Capital Artillery attacks. It costs 6 Command Points per SDS Unit to plot a Capital Artillery attack. Capital artillery has a range and flight time equal to a Cruise Missile/120. The base to-hit for a Capital Artillery attack is the Skill Rating of the attacking Element, modified by any appropriate modifiers from the Advanced Combat Modifiers Table (see p. 271).

If an Element (instead of an installation) makes a Capital Artillery attack, apply an additional +2 to-hit modifier if it moved during the turn in which the attack was launched. Attacks made from underwater apply an additional 1 turn of flight time for every full 2 depths of water between the attacker and the surface of the water, and an additional +3 to-hit modifier.

SQUADRONS IN COMBAT

Squadrons follow most combat rules as normal, with the following exceptions. When attacking with a squadron, roll on the Cluster Hits Table (see p. 116, *TW*) and multiply the squadron's incremental damage by the number of hits indicated. Apply this damage to the target. The squadron may engage as many targets as it has valid arcs. For fighter squadrons, this is 1. For DropShip squadrons, with a mix of aerodyne and spheroid DropShips, it can be up to 6 (Nose, Right Wing, Left Wing, Right Side, Left Side and Aft).

When taking damage in squadron, randomly determine one member of the squadron to take each hit (excess damage does not transfer to other squadron members). Each eliminated squadron member affects the column rolled on the Cluster Hits Table. Weapons critical hits affect the total damage of the squadron, not the incremental damage.

TELEOPERATED MISSILES

Teleoperated missiles may be used in *BattleForce* using the normal rules for those weapons with the following modifications. First, the rules apply to the entire capital missile attack for each firing arc, that is, the entire arc is fired as one missile. For example, a WarShip with a FL/FR capital missile attack of 4/4/4/4 may make that attack as a standard weapons attack (in which case the shots are resolved in the same round they are made), or as a Teleoperated attack (providing the Element has the TELE special ability; in which case the missile maneuvers like a fighter until it enters a hex with a target). Regardless of missile type, a *BattleForce* teleoperated missile has 30 fuel points. Each point of thrust expended consumes 1 fuel point. A missile that is out of fuel continues moving according to its heading until it flies off the map, makes an attack, or is destroyed. If the missile ends its movement phase in a hex with an opposing Unit or Element it may make an attack. The base to-hit for a teleoperated missile attack is 2, modified for any FCS hits taken by the firing Element and an additional +1 per point of damage the missile has sustained. Further, add another +1 per point of thrust expended in the current turn and a +6 if the missile is out of fuel. Teleoperated missiles may be targeted like aerospace fighters and can take damage equal to their Long Range damage value.

CAPITAL MISSILE BEARINGS ONLY & PREPROGRAMMED WAYPOINT LAUNCHES

These attacks may be made by any Element with a capital missile launcher and follow the standard rules as presented in the Advanced Aerospace Combat chapter of this book (see pp. 100–101) except that the entire arc is fired as one missile.

END PHASE

The following section describes additional rules for the End Phase.

MORALE

Professional soldiers are a tough lot, but sometimes even the most battle-hardened warrior will crack under pressure. The morale rules simulate this aspect of war. Elements operating together as a Unit tend to have better morale as their brothers and sisters in arms provide a measure of support. Elements operating alone are generally more prone to losing morale. Units and lone Elements that are attacked by infernos, cruise missiles or orbit-to-surface attack—including Capital Artillery (even if normally immune to Morale checks) must make a Morale check.

A Morale check is made with a 2D6 roll. The base target number is based on the experience level and type of the Unit or Element in question, as shown on the Morale Table (see p. 296). Several modifiers apply. If the result of the roll is greater than or equal to the modified target number, the Unit passes its Morale check. If the result is lower than the target number, the Unit's morale is broken.

Morale Checks (Units)

A Unit must make a Morale check in the End Phase of any turn in which one or more of its Elements was destroyed. The Morale check for the Unit is based on its predominant Element

MORALE TABLE

Unit Experience	BattleMechs*	Combat Vehicles†	Infantry**	Support Vehicles‡
Really Green	5	7	10	11
Green	3	5	8	9
Regular	1	3	5	6
Veteran	—	1	3	4
Elite	—	—	1	1
Legendary	—	—	—	—
Heroic	—	—	—	—

Element Experience	BattleMechs*	Combat Vehicles†	Infantry**	Support Vehicles‡
Really Green	6	8	11	12
Green	4	6	9	10
Regular	2	4	6	7
Veteran	—	2	4	5
Elite	—	—	2	2
Legendary	—	—	—	—
Heroic	—	—	—	—

Infantry Only††	Modifiers	Units Only	Modifiers	Situation	Modifiers
'Mech Attack	+1	Broken Morale	+1	Inferno Attack	+1/+3§
Artillery Attack	+2			Cruise Missile	+2
Broken Morale	+1			Orbit-to-Surface Attack	+4
In Building Hex	–2				
Battle Armor	–2				

*Includes OmniMechs, aerospace fighters and ProtoMechs.
**Includes battle armor.
†Includes conventional fighters, Small Craft, DropShips and WarShips.
††Apply each modifier only once.
‡Includes Military Support Vehicles, JumpShips and Space Stations.
§All other Element types / infantry Elements

type. For example, a Unit with 3 'Mechs and 1 Combat Vehicle would make its Morale check as a 'Mech Unit.

Morale Checks (Elements and Single-Element Units)

Elements that are separated from their Unit (whether split or detached) and Elements that operate alone must make Morale checks if they lose all their armor and any time they take structure damage. Additionally, conventional infantry operating alone must make a Morale check any time they take damage (they do not have to make two checks if they take damage and lose all their armor from a single hit).

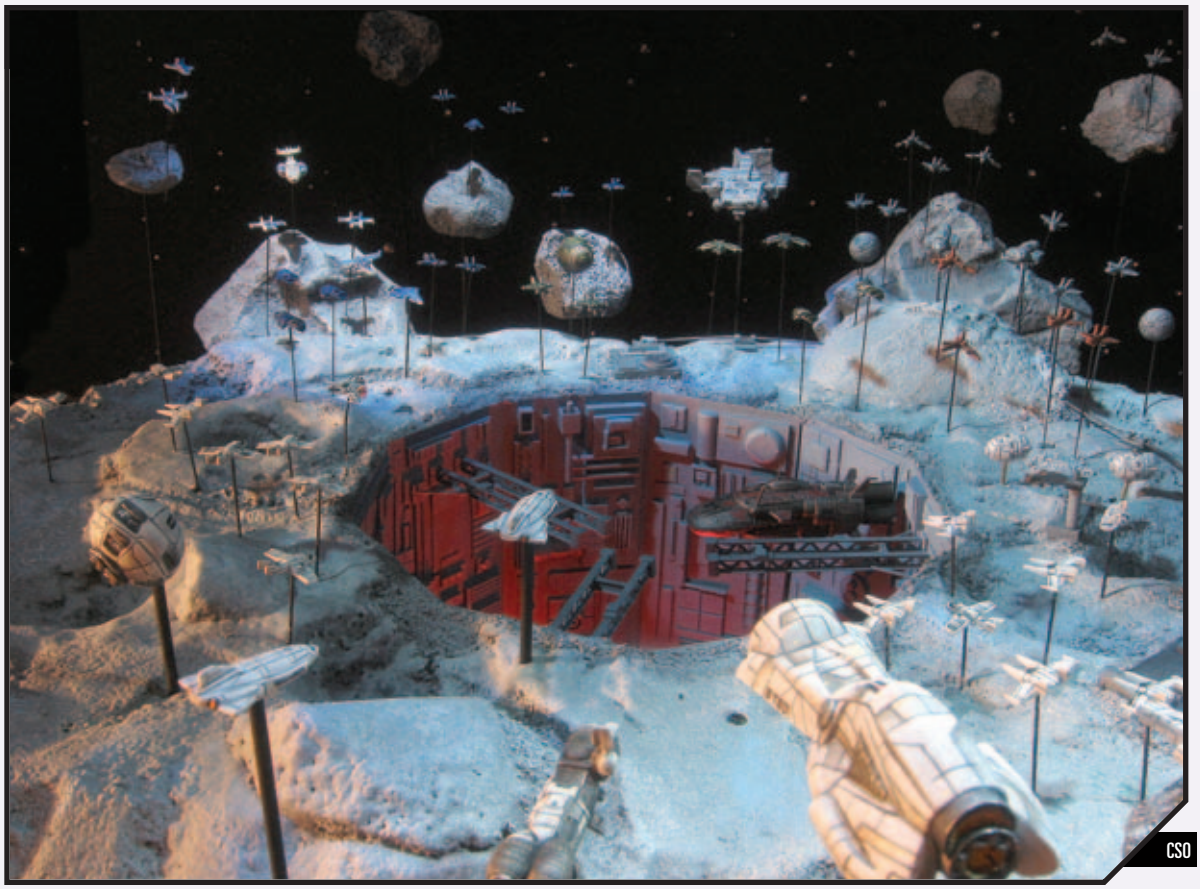
Broken Morale: Broken Elements/Units have a +1 modifier to all Morale checks and must begin moving toward their home map edge. The Element/Unit must decrease its distance from its home map edge each turn, but otherwise its movement is at the discretion of the controlling player. Broken Elements/Units reaching the home map edge will exit the map and are removed from play.

If a broken Unit fails a Morale check, it is routed. Broken infan-

RECOVERING NERVE TABLE

All Elements/Unit Situation	Modifier
Element with the Leader special ability within 6 hexes	–Tier of Command

Infantry Only	
Situation	**Modifier**
Friendly non-'Mech, non-infantry Unit within LOS	–1
Friendly 'Mech in LOS	–2
Routed infantry Element/Unit within LOS	+1
Routed non-infantry Element/Unit within LOS	+2



A massive battle ensues for the Ruins of a Gabriel, a Star League-era naval repair and refit facility hidden in the depths of the Odessa system.

try Units or Elements must move toward cover in addition to heading toward their deployment zone. A broken Unit cannot issue or move requests for commands, nor can it receive or move commands. If it is already in possession of Rally to the Flag or Hold the Line, it may execute those commands. Broken Units and Elements can make attacks of their own, but cannot spot for other Units' indirect-fire or artillery attacks.

If a grounded DropShip (or Small Craft) fails a Morale check, it must begin preparations for lift-off. These Elements must depart the battlefield during the Movement Phase of the third turn after the turn in which their morale broke (unless they recover their nerve; see below). Once airborne, a broken DropShip (or Small Craft) must move toward its home map edge just like a ground Element.

Routed: A routed Unit is demoralized by panic. It may not attack opposing Units and must move toward its home map edge as quickly as possible, using all available movement regardless of the tactical situation. If a grounded DropShip (or Small Craft) is routed, it must lift off during the first available Movement Phase and exit off its home map edge as quickly as possible.

Recovering Nerve: A broken Unit may attempt to recover its nerve during the End Phase of each turn after the turn in which it broke. In order to recover its nerve, a broken Unit must make a Morale check applying all modifiers from the Morale Table and the Recovering Nerve Table. If successful, the Unit recovers and may function normally. If the check fails, the Unit remains broken.

If any Element with the Leader (LEAD) special ability (see p. 350) is within 6 hexes of a broken Unit or Element, and within LOS of that Element, apply its tier of command as a negative modifier to the Morale check target number. For example, a battalion commander (Tier 3) is within LOS and 6 hexes from a broken Unit. That Unit would get a –3 modifier to its Morale check target number.

LOSS OF LEADER (OPTIONAL)

Seeing your CO go down in a hail of fire can have a decidedly detrimental effect on your perception of the battle. This moment of terror and indecisiveness is simulated in *BattleForce* by the Loss of Leader rule. Any time an Element with the Leader (LEAD) special ability (see p. 350) is destroyed, the Chain of Command is disrupted. Units subordinate to that Element may not receive new commands or pass new requests up the Chain of Command for a number of turns equal to the tier of command occupied by the lost Element.

If a Force's headquarters is captured, no new commands may be drawn for 5 turns.

COMMANDS (OPTIONAL)

Commands add a variety of new options to *BattleForce*. Commands may be used in two ways: detailed or abstract. The detailed method adds a new level of complexity to *BattleForce*, while the abstract method is a quick and easy way to introduce commands into your *BattleForce* game. Both methods follow the same general rules.

The detailed command method (presented here) requires players to move commands through the Chain of Command (represented by a Chain of Command Diagram) from the rear echelon commander issuing the order to the grunt who carries it out. The abstract command method uses the same rules as the detailed method, but without the Chain of Command.

CHAIN OF COMMAND

The Chain of Command is an abstract representation of lines of communication, duty and responsibilities that allows a military organization to function. At the top, a single commander (represented in *BattleForce* by the player) orchestrates the battle. The next level down is the field headquarters (if present) responsible for relaying instructions from the commander to field commanders who in turn relay those instructions to their soldiers. If a field headquarters is not being used in the scenario, then commands start at the field commander and move down the Chain of Command to Units. Similarly, requests stop at the field commander if a field headquarters is not in use. If the field headquarters is captured, commands begin and end with the field commander, and do *not* pay the cost for "moving" from the non-existent headquarters. If a field headquarters is included in the scenario, each regiment, Galaxy, Level IV includes its own counter.

For ease of reference, each level of command is assigned a numbered tier. Tier 5 is the field headquarters. Tier 1 is lance commander. Each tier of command (except for Tier 5) is subordinate to (under the command of) the tier above it. Each tier (except for Tier 1) is also superior to (in command of) the tiers below it.

The following diagrams illustrate the standard Chain of Command for all factions. Each diagram includes a complete Tier 5 command for the appropriate faction. For clarity, fewer support and transport Elements are shown than are possible for a Tier 4 command. The diagrams are color-coded for ease of reference: HQ is green, Tier 4 commands are blue, Tier 3 commands are yellow, Tier 2 commands are orange and Tier 1 Units are white. Remember, ComStar/WoB Forces do not have Tier 2 commands. The individual Units are also labeled for ease and uniformity of reference.

Blank, full-size copies of these diagrams may be found in the back of the book.

Command Origin: The command origin is the initial point at which drawn commands are placed on the Chain of Command diagram (usually the Field Headquarters). However, if the headquarters has been captured or is not in play, the field commander becomes the command origin.

Field Commander: The field commander is the command Unit with the highest Tier of command or the command Unit selected when there is a tie for the highest Tier. A field commander must be Tier 2 or higher. When a Force is reduced to only one Tier 2

INNER SPHERE CHAIN OF COMMAND

Command Units		Direct Subordinate Units
5	Headquarters	4A, 1B, 1C
4A	Regimental Command Company, Command Lance	3D, 3E, 3F, 1A
2B*	Transport Command Unit	1B
2C*	Support Command Unit	1C
3D	First Battalion Command Lance	2G, 2H, 2I
3E	Second Battalion Command Lance	2J, 2K, 2L
3F	Third Battalion Command Lance	2M, 2N, 2O
2G	G Company Command Lance	1G
2H	H Company Command Lance	1H
2I	I Company Command Lance	1I
2J	J Company Command Lance	1J
2K	K Company Command Lance	1K
2L	L Company Command Lance	1L
2M	M Company Command Lance	1M
2N	N Company Command Lance	1N
2O	O Company Command Lance	1O

*Tier 1 Command

CLAN CHAIN OF COMMAND

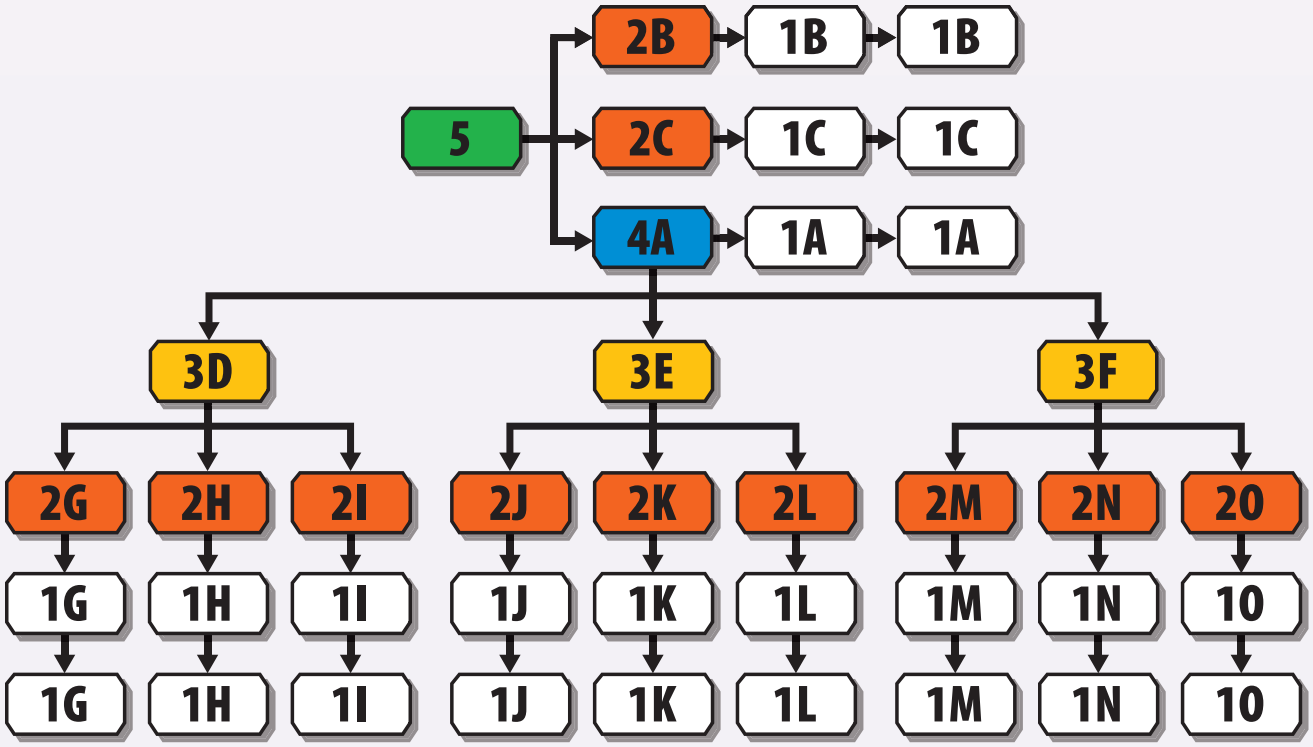
Command Units		Direct Subordinate Units
5	Headquarters	4A, 2B, 2C
4A	Galaxy Cmd., Cluster A Cmd., Trinary A Cmd.	3D, 3E, 2I, 2K, 1J
2B*	Transport Command Unit	1B
2C*	Support Command Unit	1C
3D	Cluster D Command and Trinary D Command	2F, 2H, 1G
3E	Cluster E Command and Trinary G Command	2L, 2N, 1M
2F	Trinary F Command	1F
2H	Trinary H Command	1H
2I	Trinary I Command	1I
2K	Trinary K Command	1K
2L	Trinary L Command	1L
2N	Trinary N Command	1N

*Tier 1 Command

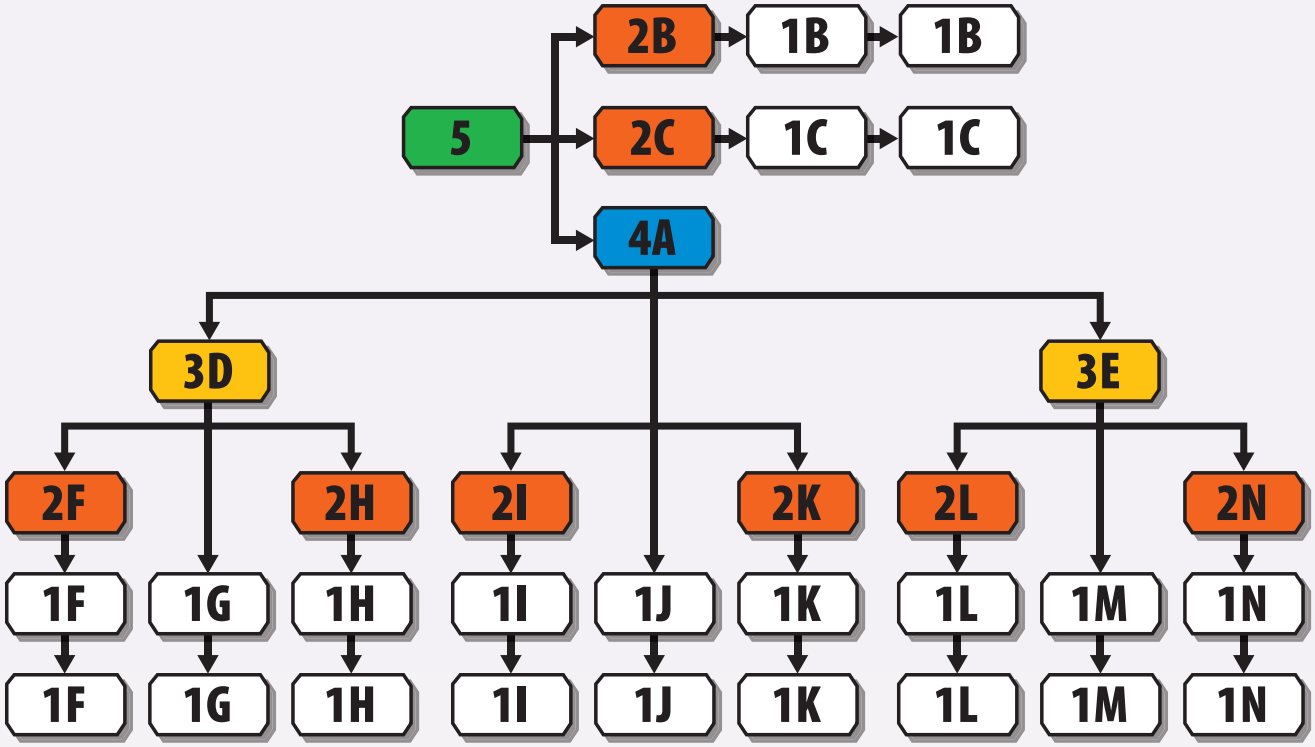
COMSTAR/WOB CHAIN OF COMMAND

Command Units		Direct Subordinate Units
5	Headquarters	4A, 2B, 2C
4A	Level IV A Command & Level III A Command	3D, 3E, 3F, 3G, 3H 1A
2B*	Transport Command Unit	1B
2C*	Support Command Unit	1C
3D	Level III D Command	1D
3E	Level III E Command	1E
3F	Level III F Command	1F
3G	Level III G Command	1G
3H	Level III H Command	1H

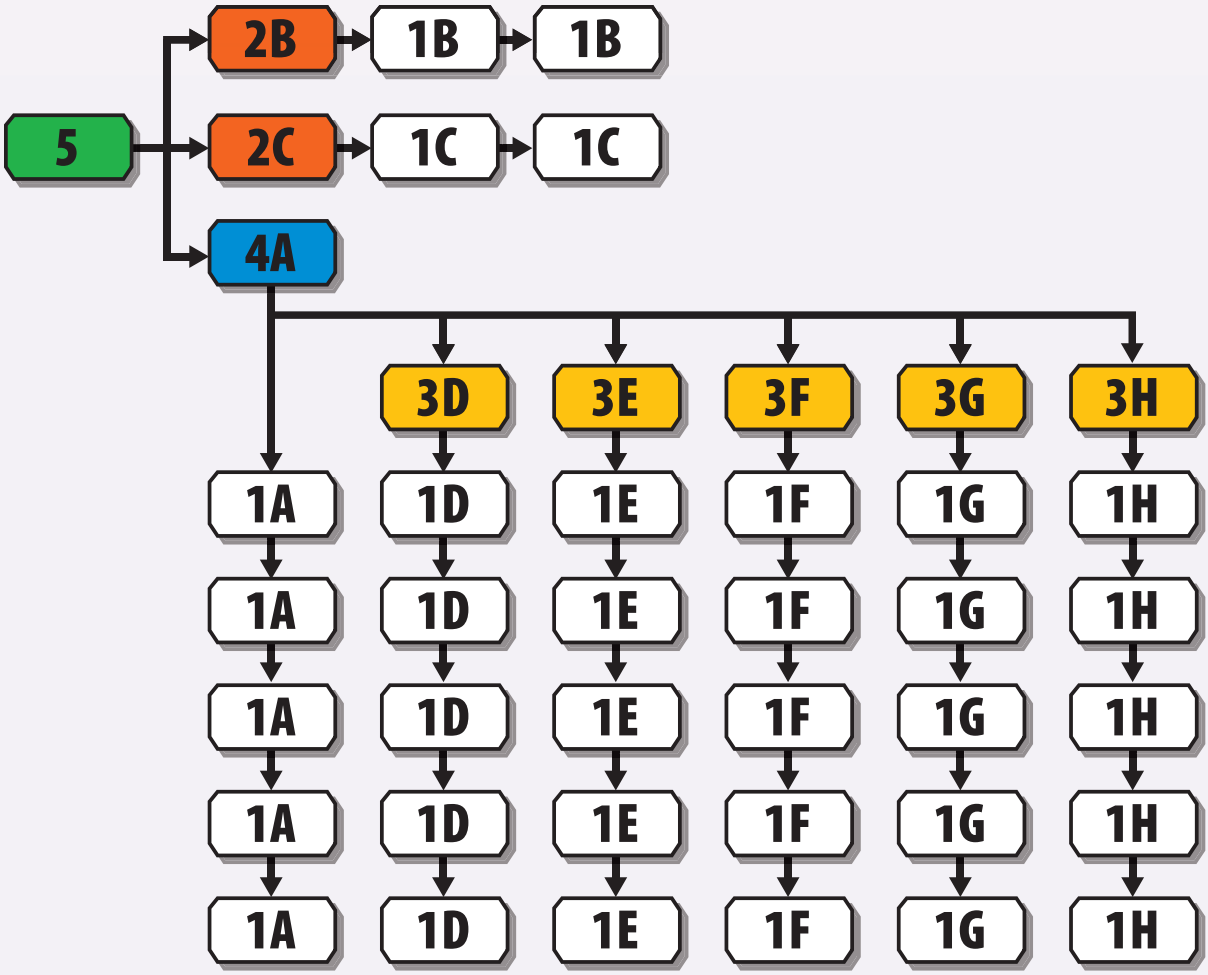
*Tier 1 Command



• INNER SPHERE CHAIN OF COMMAND DIAGRAM •



• CLAN CHAIN OF COMMAND DIAGRAM •



• COMSTAR/WOB CHAIN OF COMMAND DIAGRAM •

command Unit, that Unit automatically becomes the field commander. Only Units originally in its Chain of Command may issue requests for orders, but the field commander may move orders to all surviving Units.

If the field commander is also the command origin, commands are placed on the field commander on the Chain of Command diagram. This occurs when a headquarters counter is not in play or has been captured.

If the current field commander was not the field commander at the start of play, and the field commander is not the command origin, command points must be spent to move commands and requests through any destroyed Units superior to the field commander in the Chain of Command.

BUILDING THE CHAIN OF COMMAND

The Chain of Command is linked to preparing a Force for play, as one dictates the other. A Force may be created first and adapted to fit a Chain of Command, or a Chain of Command may be chosen/created and a Force tailored to fit it. While this may appear daunting, it's actually simple. Each Chain of Command may support a maximum number of Units as shown on the diagrams (see pp. 299–300. Simply assign each Unit in the Force to a position in the Chain of Command until all positions have been filled.

The Force Distribution Table (see p. 239) also defines the various "standard" Formations for each faction. These Formations create three command structures: Inner Sphere (including House, Mercenary and Periphery Forces), Clan and ComStar/Word of Blake. Alternative Formations are possible using the Advanced Military Organization rules, at right.

Advanced Chain of Command (Optional): These rules assume players will follow one of the three traditional Inner Sphere military organizations, ComStar/Word of Blake, and the Clans. However, players can create significantly more complex Chain of Command structures if they wish, subject to the following requirements:

- No single tier of command may have more than 9 direct subordinate Units.
- No Unit may consist of more than 9 Elements.
- No Unit may hold more than 3 tiers of command

For example, a battalion can be modified so that company commanders are eliminated and all 9 lances reported directly to the battalion commander, effectively making the battalion a Tier 2 (company) commander for each company and the Tier 3 (battalion) commander (see *Advanced Military Organization*, below).

Advanced Military Organization (Optional): Regiments, Level IIIs and Galaxies are the most prevalent large Formations in *Bat-*

ADVANCED FORCE DISTRIBUTION TABLE

Inner Sphere Forces	
Formation	**Elements**
Under-Strength Company	2 Lances (4-12)
Regular Company	3 Lances (6-18)
Reinforced Company	4 Lances (8-24)
Under-Strength Battalion	2 Companies + 1 Command Lance — Optional (14-54)
Regular Battalion	3 Companies + 1 Command Lance — Optional (20-78)
Reinforced Battalion	4 Companies + 1 Command Lance — Optional (26-108)
Under-Strength Regiment	2 Battalions + 1 Command Company — Optional (34-228)
Regular Regiment	3 Battalions + 1 Command Company — Optional (48-330)
Reinforced Regiment	4 Battalions + 1 Command Company — Optional (62-432)
Strong Regiment	5 Battalions + 1 Command Company — Optional (76-534)

Clan Forces	
Formation	**Elements**
Nova	2 Stars [1 'Mech and 1 Battle Armor] (10)
Binary	2 Stars (10)
Trinary	3 Stars (15)
Supernova Binary	4 Stars [2 'Mech and 2 Battle Armor] (20)
Supernova Trinary	6 Stars [3 'Mech and 3 Battle Armor] (30)
Under-Strength Cluster	2 Binaries, Trinaries or Supernovas (20-50)
Regular Cluster	3 Binaries, Trinaries or Supernovas (30-75)
Reinforced Cluster	4 Binaries, Trinaries or Supernovas (40-100)
Strong Cluster	5 Binaries, Trinaries or Supernovas (50-105)
Under-Strength Galaxy	2 Clusters (40-210)
Regular Galaxy	3 Clusters (60-315)
Reinforced Galaxy	4 Clusters (80-420)
Strong Galaxy	5 Clusters (100-525)

ComStar/WoB Forces	
Formation	**Elements**
Under-Strength Level III	5 Level IIs (10-45)
Regular Level III	6 Level IIs (12-54)
Reinforced Level III	7 Level IIs (14-63)
Under-Strength Level IV	5 Level IIIs (50-315)
Regular Level IV	6 Level IIIs (60-378)
Reinforced Level IV	7 Level IIIs (70-441)

tleTech. However, they are not the only Formations available.

The Advanced Force Distribution Table shows the composition of each type of Formation, beginning with the smallest Formation for each faction and progressing to the largest. This table assumes the Non-Standard Lance Organization Table (see p. 335) is in use.

Each line of the table lists the Formations by faction. The numbers in parentheses indicate the total number of Elements at that Unit size. Very large Formations such as Regimental Combat Teams, Divisions, Corps, Armies and the like are beyond the scope of the *BattleForce* system. Such large Formations, even when abstracted to *BattleForce* scale, create games that are generally too large to be playable.

Players may create additional Formations, but no single tier may have more than 9 Elements.

Command Units

Any company-equivalent or larger Formation includes a command Unit responsible for the Unit's actions. Some commands may only be executed by a Command Unit. Additionally, a single combat Element in each Unit (command and otherwise) receives the Leader (LEAD) special ability (see p. 350) and generates Command Points. A single support and single transport Element (per regiment-equivalent formation) are selected to receive the Leader special ability at Tier 1.

Headquarters

If the Force includes Units with the Mobile Headquarters ability, they may be assigned to the Headquarters counter and placed in the hex with it on the battlefield. Otherwise, Units are never assigned to the headquarters position in the Chain of Command. Headquarters is represented by a Headquarters counter.

Subordinate Units

A subordinate Unit is any Unit that directly reports to a command Unit. This includes lances within a company, Stars within a Trinary and Level IIs within a Level III.

Most command Units are also subordinate Units. As shown on the Chain of Command Table, company commanders are subordinate to battalion commanders, who are in turn subordinate to regimental commanders, who are subordinate to headquarters.

Superior Units

Any Unit above another Unit on the Chain of Command is a superior Unit. A regimental commander is superior to a battalion commander, who is superior to a company commander.

Building the Chain of Command

There are seven steps to building the Chain of Command. After completing each step, record the information on the Chain of Command Diagram, or note it on scrap paper.

- Group Units into the smallest possible Formations. This should be a company, Trinary or Level III unless players have created their own Chain of Command.
- Each Formation will have one command Unit. Identify this Unit and record it at the uppermost position in the Formation. Record the remaining Units beneath it to indicate they are subordinate.
- Group the Formations created in Step 1 into the next larg-

CHAIN OF COMMAND TABLE

Unit – Tier 1	Reports to Tier 2	Reports to Tier 3	Reports to Tier 4	Reports to Tier 5
Lance	Company Command	Battalion Command*	Regiment Command*	HQ
Star	Trinary Command	Cluster Command	Galaxy Command	HQ
Level II	N/A**	Level III Command	Level IV Command	HQ
Support	Support Command	N/A	N/A	HQ
Transport	Transport Command	N/A	N/A	HQ

*Most Inner Sphere Formations add Units (see Force Distribution Table p. 239) to fill these roles with Formations of this size. Clan and ComStar/WoB Formations do not.
**ComStar/WoB Forces do not have an equivalent command function at this level. Their chain of command effectively skips Tier 2.

est Formation. For example: three companies group together to form a battalion. Three Trinaries group to form a Cluster. Six Level IIIs form a Level IV.

- Identify the command Unit for this Formation. Most Inner Sphere Formations have an additional Unit for this function at the battalion level. In most Clan and ComStar/WoB Formations, a Unit will perform double duty, commanding a smaller Formation (Trinary or Level III) and the larger Formation (Cluster or Level IV).
- Group the Formations created in Step 4 into the next largest Formation. Three battalions form a regiment. Three Clusters form a Galaxy. A Level IV is the largest ComStar/WoB Formation used in *BattleForce*, though in a very large game multiple Level IVs could be present on the battlefield.
- Identify the command Unit for this Formation. Most Inner Sphere Formations add a regimental command company, of which one Unit will be a company commander and the regimental commander. In most Clan Formations, one Unit performs triple duty, commanding the largest Formation (Galaxy) while also commanding a Cluster and a Trinary.
- If Support and Transport Units are present in the Force, one of each Unit must be chosen as a command Unit to which the remaining Elements are subordinate.

Choosing Command Lists

Commands are drawn from a command list appropriate to a Force's faction. If the Force is smaller than a battalion choose or generate one command list. Otherwise, for each full battalion, Cluster, or Level III present in the Force, select a command list and add it to the command pool. Although each battalion contributes their own command list, they may make use of any command in the pool, i.e. they are not limited to their own command list. Create a new command pool for each regiment, Galaxy, and Level IV has its own command pool.

A typical Inner Sphere regiment or Clan Galaxy would have 3 command lists, while a typical ComStar/WoB Level IV would have 6. The name of the command list must be recorded on all command and request counters corresponding to that list.

The Command List Table (below) provides a sample command list for each faction. Catalyst (and FanPro/FASA) *BattleForce* scenarios will normally include command lists tailored to the Forces and situation, and may include new command effects as well.

Players are strongly encouraged to develop their own command lists using the rules below.

Designing Command Lists

A command list must have a unique name and include ten command effects, numbered from one to ten. No command may appear more than four times on a command list. Each command presented in *BattleForce: Standard Rules* has a Point Value associated with it. The total Point Value for a command list may not exceed 25 points.

Points spent on creating command lists come from a unique pool of points and never affect the Point Value for a Force.

Alice picks the Inner Sphere Command List.
Aaron picks the Ghost Bear Command List.
Tim elects to create his own command list. He picks 2 copies of Bravo Zulu (3 points each), 1 Carpe Diem (3 points), 2 Charlie Foxtrot (1 point each), 1 Final Glory (2 points), 2 Hold the Line (2 points each), 1 Command Disruption (4 points), and finishes up with 1 Hello, HQ? (3 points). Totaling his point values, Tim sees that he's spend 24 points on this command list. He names the command list: WoB Alpha and arranges it as follows:

WoB Alpha
1 Bravo Zulu
2 Charlie Foxtrot
3 Charlie Foxtrot
4 Hold the Line
5 Final Glory
6 Hold the Line
7 Command Disruption
8 Hello, HQ?
9 Carpe Diem
10 Bravo Zulu

COMMAND EFFECTS

Each command has a specific effect on the Unit executing it. The command affects every Element in the Unit unless the rules for the command state otherwise.

Some commands, such as Fall Back, affect multiple Units. These commands must be executed by a particular Unit, even if the command affects a player's entire Force. A command that affects multiple Units can affect Units already operating under different commands, and the effects of the various commands are cumulative. However, commands that impose a blanket prohibition on some ability to act—for example, 0 MP or No Weapon Attacks—cannot be modified by other commands; they remain in effect regardless of the effects of other commands.

The Command Summary Table lists the various commands available in *BattleForce: Standard Rules*. The PH column indicates in which phase the command may be played (A = Any, C = Combat, E = End, M = Movement). The PV column shows the Point Value

COMMAND LIST TABLE

	Inner Sphere*	Davion	Kurita	Liao	Marik	Steiner
1	Hold the Line	Evasive Action	Hold the Line	Hello, HQ?	Fall Back!	Retreat
2	Hello, HQ?	Double-Time March	Hello, HQ?	Fall Back!	Double-Time March	No Joy
3	Careful Aim	Bait and Switch	Careful Aim	Carpe Diem	Careful Aim	Charlie Foxtrot
4	Alpha Strike!	Alpha Strike!	Alpha Strike!	Ambush	Bingo Fuel	Alpha Strike!
5	Carpe Diem	Bravo Zulu	Evasive Action	Defector	Dead to Rights	Double-Time March
6	Bait and Switch	Ambush	Bravo Zulu	Bait and Switch	Bravo Zulu	Bravo Zulu
7	No Joy	Hello, HQ?	Jam Transmission	Jury-Rig	Final Glory	Social General
8	Stand and Shoot	Luck of the Fox	Sacrifice	Stand and Shoot	Luck of the Fox	Stand and Shoot
9	Charlie Foxtrot	Carpe Diem	Final Glory	Double-Time March	Defector	Hello, HQ?
10	Retreat	Hold the Line	No Joy	No Joy	Jam Transmission	Social General

	ComStar	MoC**	Marian Hegemony	Outworld Alliance	Taurian Concordat	Word of Blake
1	Luck of the Fox	Luck of the Fox	Final Glory	Jury-Rig	Fall Back!	Jam Transmission
2	Rally to the Flag	No Joy	Hello, HQ?	No Joy	Hello, HQ?	Jury-Rig
3	Carpe Diem	Charlie Foxtrot	Carpe Diem	Dead to Rights	Bingo Fuel	Cmd. Disruption
4	Jam Transmission	Luck of the Fox	Fall Back!	Jury-Rig	Evasive Action	Jam Transmission
5	Alpha Strike!	Ambush	Alpha Strike!	Alpha Strike!	Ambush	Ambush
6	Cmd. Disruption	Evasive Action	Dead to Rights	Hello, HQ?	Careful Aim	Hello, HQ?
7	Charlie Foxtrot	Double-Time March	Carpe Diem	Fall Back!	Bravo Zulu	Defector
8	Jam Transmission	Hello, HQ?	Double-Time March	Hold the Line	Carpe Diem	Jam Transmission
9	Stand and Shoot	Sacrifice	Hold the Line	Stand and Shoot	Hold the Line	Jury-Rig
10	Ambush	Careful Aim	Bait and Switch	Ambush	Bait and Switch	Ambush

	Blood Spirit	Cloud Cobra	Coyote	Diamond Shark	Fire Mandrill	Ghost Bear
1	Stand and Shoot	No Joy	Luck of the Fox	Hello, HQ?	Stand and Shoot	Rally to the Flag
2	Careful Aim	Cmd. Disruption	Dead to Rights	Careful Aim	Careful Aim	Dead to Rights
3	Double-Time March	Fall Back!	Hello, HQ?	Evasive Action	Hello, HQ?	Hello, HQ?
4	Alpha Strike!	Bingo Fuel	Alpha Strike!	Ambush	Alpha Strike!	Alpha Strike!
5	Careful Aim	Carpe Diem	Bravo Zulu	Bingo Fuel	Careful Aim	Bravo Zulu
6	Rally to the Flag	Hold the Line	Hold the Line	Fall Back!	Hold the Line	Hold the Line
7	Alpha Strike!	Careful Aim	Alpha Strike!	Bait and Switch	Bravo Zulu	Alpha Strike!
8	Stand and Shoot	Stand and Shoot	Social General	Jam Transmission	Stand and Shoot	Stand and Shoot
9	Carpe Diem	Dead to Rights	Evasive Action	Carpe Diem	Double-Time March	Evasive Action
10	Dead to Rights	Double-Time March	Fall Back!	Double-Time March	Evasive Action	Final Glory

*Usable by House, Periphery and Mercenary commands not appearing in this table.
**Magistracy of Canopus

of each command. The MP column shows each command's effect on a Unit's MP. The Attacks column shows the modifier applied to the to-hit number for attacks made by the affected Unit. The Effects column provides general information on the command's effect.

Alpha Strike!

An alpha strike occurs whenever a 'Mech (or aerospace fighter) fires all of its weapons in a savage, all-out attack. This command throws caution to the winds in favor of staggering firepower.

The Elements of an alpha-striking Unit add 1 to their Overheat Values for the turn in which the command is used. Every BattleMech or aerospace fighter Element in the Unit gets this modifier. If an Element has no Overheat Value, treat it as if it had an OV of 1. The additional overheating capacity is used in the same way as normal overheating capacity. However, not every Element need use it or any of its Overheat Value when the Alpha Strike! command is in effect. The command merely adds to an Element's ability to overheat.

This command must be executed during the Combat Phase.

Ambush

This command orders the Unit to lie in wait for the enemy and then launch a surprise attack. This command may be played at any point during the opposing player's Movement Phase. The normal turn sequence is temporarily suspended, and each Ele-

COMMAND LIST TABLE, CONTINUED

	Goliath Scorpion	Hell's Horses	Ice Hellion	Jade Falcon	Nova Cat	Smoke Jaguar
1	Jam Transmission	Hello, HQ?	Luck of the Fox	Hold the Line	Jury-Rig	Final Glory
2	Double-Time March	Double-Time March	Dead to Rights	Careful Aim	Stand and Shoot	Bravo Zulu
3	Bravo Zulu	Alpha Strike!	Alpha Strike!	Alpha Strike!	Alpha Strike!	Alpha Strike!
4	Careful Aim	Carpe Diem	Carpe Diem	Bravo Zulu	Hello, HQ?	Alpha Strike!
5	Evasive Action	Evasive Action	Double-Time March	Carpe Diem	Stand and Shoot	Dead to Rights
6	Careful Aim	Carpe Diem	Bait and Switch	Ambush	Bravo Zulu	Alpha Strike!
7	Stand and Shoot	Stand and Shoot	Stand and Shoot	Stand and Shoot	Hold the Line	Stand and Shoot
8	Hello, HQ?	Final Glory	Evasive Action	Double-Time March	Jury-Rig	Final Glory
9	Sacrifice	Social General	No Joy	Social General	Carpe Diem	Stand and Shoot
10	Fall Back!	Final Glory!	Evasive Action	Dead to Rights	Final Glory	Dead to Rights

	Snow Raven	Star Adder	Steel Viper	Wolf	Wolf (in-Exile)
1	Hello, HQ?	Hello, HQ?	Fall Back!	Hello, HQ?	Dead to Rights
2	Careful Aim	Bait and Switch	Careful Aim	Bravo Zulu	Carpe Diem
3	Alpha Strike!	Carpe Diem	Double-Time March	Dead to Rights	Charlie Foxtrot
4	Bingo Fuel	Hello, HQ?	No Joy	Jam Transmission	Hello, HQ?
5	Carpe Diem	Alpha Strike!	Alpha Strike!	Alpha Strike!	Alpha Strike!
6	Ambush	Bait and Switch	Careful Aim	Bait and Switch	Bait and Switch
7	Luck of the Fox	Bingo Fuel	Carpe Diem	Charlie Foxtrot	Carpe Diem
8	Evasive Action	Final Glory	Evasive Action	Final Glory	Dead to Rights
9	Jam Transmission	Luck of the Fox	Stand and Shoot	Luck of the Fox	Social General
10	Dead to Rights	Alpha Strike!	Alpha Strike!	Alpha Strike!	Ambush

*Usable by House, Periphery and Mercenary commands not appearing in this table.
**Magistracy of Canopus

ment in the Unit executing the command may attack immediately. These attacks are resolved normally; damage takes place immediately. Afterward, the opponent's turn continues.

A Unit may not execute this command if it has already attacked during the current turn. Additionally, a Unit executing this command may not attack during its player's Combat Phase.

This command must be executed during the Movement Phase.

Bait and Switch

Particularly in the heat of battle, things aren't always what they appear to be. This command calls for a Unit to appear disorganized and slow in the heat of battle in an effort to draw fire, but once the opponent takes the bait, the ruse is revealed.

The Unit executing this command suffers a –2 MP penalty, in exchange for getting a –1 to-hit modifier for each of its Element's attacks. Attacks against this Unit suffer a +1 to-hit modifier.

This command must be executed during the Combat Phase; the Unit executing this command must have used 2 less than its normal MP during the Movement Phase.

Bingo Fuel

All that high-speed maneuvering burns fuel quickly. A good pilot keeps an eye on his fuel reserves and makes sure he can hang in the fight, but sometimes it just isn't enough.

This command must be executed in the Movement Phase by the highest-tier command Unit in the Force. In the event of a tie, any Unit at the tier in question may execute this command. A Force with no remaining command Units may not execute this command.

The player executing this command chooses one opposing aerospace Unit that must abandon the field of play. The affected Unit must move off the field through its home map edge, using all available thrust to perform the maneuver as quickly as possible. The affected Unit is permitted to make attacks on its way out. Once it leaves the field, it is considered destroyed for victory conditions.

Command Disruption and Jam Transmission will cancel this command.

Unlike most other commands, this command is not returned to the Command Pool once played. Instead it is set aside for the remainder of the game, and may not be used again.

A Warship cannot be the target of this command.

Bravo Zulu

The emboldened Unit executing this command pushes its Elements far beyond their normal ability, drawing forth every last scrap of firepower at their disposal. Every Element in this Unit adds 2 to its Overheat Value. If the Unit does not normally have an OV, treat it as if it had an OV of 2. Additionally, all Elements in this

COMMAND SUMMARY TABLE

Command Name	PH	PV	MP	Attacks	Effects
Alpha Strike!	C	2	—	—	Add +1 to the Overheat Value of entire Unit
Ambush	C	3	—	—	Interrupt opponent's movement phase and attack
Bait and Switch	C	2	–2	–1	Attacks against Unit suffer +1 to-hit modifier
Bingo Fuel	M	3	—	—	Opposing aerospace Unit leaves play
Bravo Zulu	C	3	—	+2	Add +2 to the Overheat Value for entire Unit
Careful Aim	C	2	None	–1	Unit may not jump, but gains –1 to-hit modifier
Carpe Diem	E	3	—	—	Force gets a +2 initiative modifier next turn
Charlie Foxtrot	C	1	—	—	Element does +1 damage in physical attacks
Command Disruption	A	4	—	—	Interrupts all opposing commands
Dead to Rights	C	2	—	–3	One Element gets –3 to-hit modifier
Defector	A	4	—	—	Opposing Unit changes sides
Double-Time March	M	1	+1	+1	1 additional MP, with a +1 to-hit modifier
Evasive Action	M	2	—	None	All attacks against Unit at +2 to-hit modifier
Fall Back!	M	2	+2	+2	All subordinate Units may not move closer to enemy
Final Glory	C	2	—	—	Eliminates one opposing Element; Unit is easier to hit
Hello, HQ?	A	3	None	—	Target Unit can't move, Elements at 1/2 move for to-hit
Hold the Line	C	2	None	–1	Unit gets a –1 to-hit modifier and make Morale check
Jam Transmission	A	2	—	—	Cancel opposing Unit's command
Jury-Rig	A	1	—	—	Target Element suffers 1 point of damage
Luck of the Fox	A	3	—	—	Unit may re-roll any one roll, or Force opponent to re-roll
No Joy	C	2	—	—	Opposing Unit cannot attack
Rally to the Flag	E	1	—	—	Unit automatically makes Morale check
Retreat	M	2	Double	None	All subordinate Units move double
Sacrifice	C	2	—	—	One Element makes special charge attack
Social General	C	3	—	Varies	Unit is easier to hit in exchange for attack bonus
Stand and Shoot	C	4	None	–2	Unit can't move, but gets a –2 to-hit modifier

Unit suffer an additional +2 to-hit modifier on their attacks. An Element does not have to use the full Overheat Value when executing this command.

This command must be executed during the Combat Phase.

Careful Aim

By concentrating on attacking instead of maneuvering, a Unit can increase the efficacy of its attacks. Each Element in the Unit executing this command gets a -1 to-hit modifier on its shots. A Unit may not execute this command if it used jumping movement during the Movement Phase.

This command must be executed during the Combat Phase.

Carpe Diem

Fate is a fickle mistress. Sometimes she's with a Force on the field, sometimes she's against it. Whether from tactical genius or good old-fashioned luck, a Force commander can sometimes get the drop on his opponent.

This command must be executed by the highest-tier command Unit during the End Phase of a turn. In the event of a tie, any Unit at the tier in question may execute this command. A Force with no remaining command Units may not execute this command.

The Force gets a +2 Initiative modifier on the following turn.

Charlie Foxtrot

Nothing is as messy as a knockdown, drag-out brawl between 'Mechs, except maybe dating the old man's kid.

The 'Mech Unit executing this command must be in point-blank range of an opposing Unit. The executing Unit may not make any weapon attacks, but each Element does 1 additional point of physical attack damage.

This command must be executed in the Combat Phase.

Command Disruption

Sabotage of the communications net, enemy jamming and all-around confusion can play a major role in hampering a Unit's combat effectiveness. This devastating command cancels the effects of all commands executed by the opposing Force during the current turn, and prevents the opposing player from executing any additional commands until the Initiative Phase of the following turn.

If two players both attempt to execute Command Disruption at the same time, neither is effective.

This command may be executed at any time, but must be executed by the highest-tier command Unit in the executing Force. In the event of a tie, any Unit at the tier in question may execute this command. A Force with no remaining command Units may not execute this command.

Unlike most other commands, Command Disruption is not returned to the Command Pool once played. Instead, it is set aside for the remainder of the game and may not be used again.

Dead to Rights

One Element in the Unit executing this command gets a –3 to-hit modifier for its attack. Sometimes, you've got the touch.

This command must be executed during the Combat Phase.

Defector

They say war makes for strange bedfellows. Whether from a planned act or a spontaneous betrayal, Units occasionally switch sides during a conflict. Sometimes this is as benign as a faulty IFF transponder, but often it's far more sinister.

This command may be executed in any phase, but must be executed by the highest-tier command Unit in the Force. In the event of a tie, any Unit at the tier in question may execute this command. A Force with no remaining command Units may not execute this command.

Defector may not be used against any Unit with Elite or better experience. If played against such a Unit, the command fails and is lost. The player executing this command chooses one opposing Unit that immediately switches sides.

Command Disruption and Jam Transmission will cancel this command.

Unlike most other commands, the defector is not returned to the Command Pool once played. Instead, it is set aside for the remainder of the game and may not be used again.

Double-Time March

With this command, the commander orders the Unit to step up its pace and move into position as quickly as possible. The Unit speeds up considerably, but loses some accuracy when making attacks as a result.

Double-Time March adds 1 to the MP of every Element in the affected Unit for the turn. This increased speed has the additional result of making the Unit harder to hit, because an Element's MP is used to determine the base to-hit number for attacks. However, the rapid movement also imposes a +1 modifier to the to-hit number for attacks made by the affected Unit.

This command must be executed during the Movement Phase.

Evasive Action

The Evasive Action command throws the Unit into a series of erratic maneuvers intended to make its Elements harder for the opponent to hit. Because the Unit is concentrating on avoiding incoming attacks, however, it cannot launch attacks of its own in the Combat Phase of the current turn. A Unit that has already attacked may not execute this command.

A +2 to-hit modifier applies to all attacks against the affected Unit. This command must be executed during the Combat Phase, and may be executed after an enemy Unit has declared an attack on the affected Unit but before that attack is resolved. The attacking Unit must still resolve its attack as declared.

Fall Back!

Sometimes the best solution to a bad situation on the battlefield is a retrograde maneuver. That's fancy command-speak for retreat and regroup. When the Fall Back! command is given, the Unit executing this command and all Units subordinate to it immediately begin to withdraw to a better position in order to resume the offensive.

Every affected Unit adds +2 MP to all of its Elements, increasing their speed and making them harder to hit. However, an additional +2 modifier applies to all attacks made by Units falling back, to reflect the fact that the Units are more interested in regrouping than in making accurate shots.

Units that are falling back must move along the most direct path toward their home map edge.

This command must be executed during the Movement Phase by a command Unit.

Final Glory

Those who are willing to take big risks in combat can achieve incredible gains. This command orders a Unit to eliminate an opposing Element at all costs. The Unit executing this command may not have lost any Elements. It targets an opposing Unit within medium range. All Elements in the attacking Unit must fire at the same Element (which cannot be a DropShip, Small Craft, Large Support Element or Large Transport Element) in the targeted Unit. That Element is automatically eliminated regardless of the damage inflicted by the attack. For the duration of the Combat Phase, all shots against the attacking Unit get a –2 to-hit modifier.

This command must be executed during the Combat Phase, and the player must be Initiative Winner in the current turn.

A Warship cannot be the target of this command.

Hello, HQ?

Sunspot activity, electrical failure and even plain human error can seriously disrupt the Chain of Command. In such instances, the desperate call of "Hello, HQ? Are you there?" can be heard over the comm system, much to a commander's dismay.

Hello, HQ? may be executed during any phase. The executing Unit picks an opposing Unit within long range. That Unit may not move during the current turn (if it has already moved, this effect is lost) and each Element is considered to have half its normal MP (round up) for determining to-hit numbers.

Hold the Line

Similar to Stand and Shoot, this command orders a Unit to remain stationary and fire for effect. The Unit executing this command may not have expended any MP during the Movement Phase. For the duration of the turn, all its Elements get a –1 to-hit modifier. If applicable, the Unit automatically makes its Morale check in the End Phase.

This command must be executed during the Combat Phase.

Jam Transmission

With the proper equipment, a clever communications specialist can jam enemy transmissions, disrupting his opponent's ability to relay commands. Com Guard Adepts are well known for using this tactic to gain the upper hand.

This command is used in response to an opposing Unit executing a command. That command's effects are negated. If the target Unit contains ECM or is adjacent to another Unit on its side with

ECM, Jam Transmission fails to work and the enemy command has its normal effect. In this case, the Jam Transmission command is still considered to have been used.

This command may be executed in any phase.

Jury-Rig

Techs are often overworked and short on supplies. In the heat of a campaign, repairs are occasionally rushed or cobbled together with whatever resources are available. Sometimes, those repairs fail at a crucial moment. Jury-Rig represents just such a failure for an opposing Element. The Unit executing this command may select any opposing Element on the battlefield. That Element suffers 1 point of damage immediately. If this causes internal structure damage, roll for a critical hit normally.

Luck of the Fox

During his successful reign as leader of the Federated Suns, Prince Hanse Davion was known as "The Fox" for his legendary cunning. In truth, more often than not his best ally was sheer luck that allowed his grandiose schemes to succeed against all odds.

The Luck of the Fox command represents a stroke of luck at just the right moment. A Unit can execute this command at any time. The affected Unit may re-roll dice once—for example, repeating a failed attack roll. Alternatively, the player may Force his opponent to redo one dice roll that directly affected the Unit executing this command—for example, an attack directed against that Unit.

This command may not be used to re-roll Initiative.

No Joy

Sometimes you *can* hide in plain sight.

For the duration of the current turn, the Unit executing this command may only be attacked by Units in point-blank range.

This command must be executed in the Combat Phase.

Rally to the Flag

This command may only be executed during the End Phase. The executing Unit automatically makes its Morale check. Patriotism has its rewards.

Retreat

More serious than a retrograde maneuver, a retreat is dangerously close to becoming a rout. This command must be executed by a command Unit during the Movement Phase. All subordinate Units may expend double their normal MP, but must move toward their home map edge. In addition, each Unit executing this command must make a Morale check in the End Phase. If a Unit is compelled to make a Morale check due to damage, that check replaces the check required by this command.

A Unit receiving this command may elect to stand fast, but the Morale check still applies.

Sacrifice

A good commander knows that sometimes, brave men and women must be sacrificed for the greater good. One Element (which must be a 'Mech or vehicle) in a Unit executing this command makes a special charge against an enemy target. One Element in the target Unit is selected at random. The base to-hit number for this attack is based on the target's MP, with a –2 to-hit modifier. All other standard modifiers apply.

If the to-hit roll is successful, both the attacking and target Elements are eliminated.

Social General

House Steiner has a long history of promoting generals based on their political acumen rather than their military skill. However, any Force may find itself at the mercy of such a commander.

The Unit executing this command may give each of its Elements a to-hit bonus for its attacks. Every Element must take the same to-hit bonus, which may not be greater than –3. For the duration of the turn, all attacks against this Unit get that same to-hit bonus. For example, if the Unit used a –2 to-hit bonus, all attacks against it would get a –2 to-hit bonus.

This command must be executed during the Combat Phase, and the player executing this it must be Initiative Winner in the current turn.

Stand and Shoot

Units are almost constantly moving as they advance across the battlefield, which reduces the accuracy of the attacks they make because pilots and drivers must continuously compensate for a moving Unit's bumping and jerking around. To get the best possible shot, a Unit must come to a halt and take careful aim, which this command allows it to do.

A Unit ordered to stand and shoot may not move, but gains a –2 modifier to the to-hit number for its attacks. The MP ratings of the Elements in the Unit are not affected, and so the immobile Unit does not present an easier target for the opponent.

This command must be executed during the Combat Phase, and the Unit executing it may not have moved during the Movement Phase.



Loren Jaffray stands atop a rocky crag in his RFL-6X Rifleman.

SPECIAL RULES

The following rules provide additional game play options.

ABSTRACT GROUND SUPPORT (OPTIONAL)

BattleForce is designed to incorporate aerospace Elements using a modified version of the Aerospace Units on Ground Mapsheets rule (see p. 91, *TW*). Players who would prefer a more abstract system for using aerospace assets may use the Abstract Aerospace System (see p. 18). Each player picks one zone on the Outer Ring for their deployment area, but otherwise, the rules are used exactly as printed with *BattleForce*. This is one of the few occasions where a *BattleForce* Element actually makes a control roll. Use the Element's *BattleForce* Skill Rating as its piloting skill for these rolls.

If players are using the *BattleForce: Standard Rules*, they may elect to insert the Radar Map between the ground and space maps by selecting zones in the Inner Ring as corresponding with Deployment Zones on the Ground Map, and zones in the Outer Ring as corresponding with the Deployment Zones on the Space Map.

ABSTRACT SPACE SUPPORT (OPTIONAL)

The same concept used with the Abstract Space Support Rules can be used to handle aerospace assets in low orbit around the planet. When using the Radar Map in this fashion, the Central Zone represents the planet. Naval Forces in the Inner Ring may use orbit-to-surface attack (see p. 293) and are also vulnerable to surface-to-orbit attacks (see p. 295). The other zones represent abstract regions of space around the planet. Elements moving into the Central Zone must descend to the planetary map. If players are also using Abstract Ground Support, the Elements must move to any zone in the Outer Ring. If players are not using the Abstract Ground Support may, the Elements may move to the High Altitude Map, Low Altitude Map, or Ground Map as appropriate for the game.

ALTERNATE MUNITIONS

The abstract nature of *BattleForce* makes using specialty ammo problematic. The standard rules assume that all Elements are equipped with standard munitions, however several special munitions are suitable for use with *BattleForce*. Many have to-hit modifiers and damage modifiers as shown on the alternate munitions table. If the munitions have additional effects aside from to-hit or damage modifiers, they are described under the appropriate section. To use specialty ammo simply declare the appropriate ammo during the attack declaration phase, apply any to-hit modifiers and roll for a weapons attack as normal. If the attack is successful, adjust the appropriate special ability damage and roll for special effects (if applicable). Aerospace and infantry (including battle armor) Elements cannot use specialty ammo.

Caleb has a SHG-2F Shogun. *It has the stats shown (above right).*

If Caleb succeeds with a normal weapons attack he will do 3 points of damage at short or medium range and 2 points of damage at long range. If Caleb elects to fire Tandem Charge SRMs, his damage and to-hits will remain the same, but he will get a critical hit chance on a successful hit. If he decides on FTL LRMs his attack will suffer a +2 to-hit modifier, but he will do 1 additional point of damage if he's successful. Finally, if he uses both munitions simultaneously, he will do an extra point of damage and get a critical hit chance on a successful hit, though his attack will have an extra +2 to-hit modifier. He would also have to be at short or medium range for this effect; at long range he would lose the critical hit chance from the Tandem Charge SRMs.

SHG-2F SHOGUN

MP	Damge S/M/L/E	Overheat	Wt. Class	Armor/ Structure	Point Value	Specials
3j	1/1/1/– SRM: 1/1/–/– LRM: 1/1/1/–	N/A	4	8/7	18	CASE

Limited Use (Optional)

These rules greatly simplify the use of alternate munitions permitting a variety of choices. Although ammunition is not tracked in *BattleForce* players may invoke the Limited Use rule to limit the number of alternate munitions available to an Element based upon its *Total Warfare* stats; i.e. 1 type of ammo may be used in *BattleForce* per ton of ammo carried.

Artillery

Various types of artillery munitions are available in *BattleForce*.

Air Defense Arrow IV: These missiles may be used as direct-fire artillery in a ground-to-air attack against targets at Low and Medium altitude. Treat this as a standard ground-to-air attack, not an artillery attack. Modify the to-hit number by –2 due to the type of missile.

Copperhead: Available to Long Tom, Thumper and Sniper only, Copperhead rounds function exactly like an Arrow IV homing missile. Damage to target Element from Long Tom: 3, from Sniper: 2, from Thumper: 1.

Flechette: Inflicts double damage against conventional infantry Elements, no damage against all other Elements. Available to Long Tom, Thumper and Sniper only.

Illumination: These rounds illuminate the target hex, negating all dawn/dusk and night modifiers for targets in that hex or in adjacent hexes. Illumination rounds will provide light for 10 turns after which they burn out. Long Tom illumination rounds illuminate a target hex and all six adjacent hexes (spreading their effect to all hexes adjacent to those six hexes). Thumper and Sniper illumination rounds only illuminate a target hex and spread their effect to all adjacent hexes.

Illumination Arrow IV: Same as Thumper or Sniper illumination rounds for area of effect, but delivered by Arrow IV.

Inferno IV: Sets target hex on fire and adds Heat2 to any Element in or moving through the hex; available to Arrow IV only.

Smoke: These munitions are available to all artillery types. The target hex is filled with heavy smoke until the end phase of the following turn. All adjacent hexes are filled with light smoke until the end phase of the following turn. The smoke is 2 levels high for LOS purposes.

Thunder: See *Weapon Delivered Minefields*, p 289.

Bombs/Aerospace Missiles

BattleForce Standard Rules allows for the use of Cluster, HE, and

Inferno bombs only, and does not differentiate between them for purposes of damage. In Advanced Rules, multiple types of bombs may be carried by an aerospace Element (or VTOL) and may be employed against targets on the ground (or in space). Unless otherwise stated all bombs occupy 1 bomb slot. Unless otherwise stated, all bombs/missiles are one-use items and are expended whether or not their attack is successful.

Air-to-Air Arrow IV Missile: An aerospace Element may make an extra weapons attack with this missile during the weapons attack phase. The target must be within medium range. These missiles do 2 points of damage on a successful hit. They may not be used against ground targets.

Anti-Ship Missiles: An aerospace Element armed with these missiles may make one extra weapons attack with this missile during the weapons attack phase. The target must be within long range. It may be fired through the space/atmosphere interface from altitude row 3 or higher and target ships in space. On a successful hit the missile does 3 points of damage. These missiles suffer a +4 to-hit modifier against aerospace fighters, small craft, aerospace squadrons, and Size Class 1 DropShips.

Anti-Ship EW Missiles: These missiles may only be fired in space. An aerospace Element armed with them may make one extra weapons attack with the missile during the weapons attack phase. The target must be within long range. If successful, the target suffers a +4 to-hit modifier for all its attacks from the arcs covering the struck hexside (e.g. a DropShip struck on the front left hexside would have its left side arc affected—standard, sub-capital, and capital missile if applicable). Additionally this missile disrupts Naval C^3 for the following turn.

Arrow IV (Homing or Standard): Treat as an Arrow IV artillery attack originating from the ground hex corresponding to the Element's position for range and flight time. This missile may be launched in addition to any normal weapons attacks permitted by the fighter, but Command Points must be spent as with any artillery attack.

Cluster (Advanced Rules Version): Cluster bombs do 1 point of damage to all Elements in the target hex.

High Explosive—HE (Advanced Rules Version): HE bombs do 2 points of damage to all Elements in one Unit in the target hex.

Inferno: Inferno bombs work as described in the standard rules, except that they also create a fire (even in water hexes) for 10 turns. If the fire and smoke rules are not in play, treat this as an inferno bomb attack as described in the standard rules.

Laser-Guided: These bombs are identical to HE bombs, but if a friendly Element successfully paints an Element in the target Unit with TAG during the same turn as the bombing attack, apply a –2 to-hit modifier on the bombing attack.

Light Air-to-Air Arrow IV Missile: An aerospace Element may make an extra weapons attack with this missile during the weapons attack phase. The target must be within medium range. These missiles may only be used in the atmosphere and do 1 point of damage on a successful hit. They may not be used against ground targets. Two of these missiles may be carried per available bomb slot.

Rocket Launcher: These bombs do 1 point of damage to a single Element in the target hex.

TAG: Not a bomb per se, the TAG pod allows an aerospace Element operating at low altitude to paint targets with TAG the same as a ground Element. The target number for this attack is the Skill Rating of the attacking Element +2. An aerospace Element may not make additional attacks in a turn in which it makes this attack. This is a reusable item and is not expended by making an attack.

Thunder Bombs: These bombs are deployed by altitude or dive bombing and create a density 4 conventional, active, sea-based, or vibrabomb minefield in the target hex. Sea-based minefields deployed in this manner may be set to float at any depth.

Torpedo Bombs: Torpedo bombs target an individual Element and must also add its target movement modifier and any applicable size modifiers when making their to-hit roll. A successful hit does 1 point of damage and generates a critical hit chance on the target.

Autocannon Munitions

The following specialty munitions are appropriate for *BattleForce* play.

Armor-Piercing Ammo: Roll 2D6; on a result of 10 or better roll once on the critical hit table for the target Element. This ammo is treated like standard autocannon ammo against aerospace, infantry, and battle armor Elements.

Flak Ammo: –2 to-hit if the target is an airborne aerospace Element, VTOL, or WiGE. Half damage against (rounded down) all other Elements except conventional infantry.

Flechette Ammo: Double AC damage against non-battle armor infantry and woods, half (rounded down) AC damage against all other targets.

Precision Ammo: Reduce target movement modifier by 2 to a minimum of zero.

Tracer Ammo: Eliminate any dusk/dawn to-hit modifiers and reduce night modifiers by 1.

iNarc

Instead of firing a homing pod, a iNarc launcher may fire the following specialty pods:

Explosive: Damage for an explosive pod is 1 point for every full increment of 2 iNarc Launchers mounted on the Element.

ECM Pod: For the following turn, treat the Element as if it was enveloped in a hostile ECM field.

Haywire Pod: For the following turn, the affected Element suffers a +1 to-hit modifier on all its weapons attacks and may not spot for indirect attacks.

Narc

Instead of firing a homing pod, a Narc launcher may fire an explosive pod instead. Damage for an explosive pod is 1 point for every full increment of 2 Narc Launchers mounted on the Element.

Short Range Missiles

An Element with the SRM (SRM X/X/X/X) special ability (see p. 352) may use the alternate munitions shown below.

Inferno: An Element firing Inferno Missiles converts its SRM damage to HT damage to a max of HT2. Damage in excess of 2 is lost. For example, an Element with SRM: 1/1/—/— would make an HT1 attack. Infernos do no damage to DropShips.

Magnetic Pulse: Target suffers +1 to-hit modifier on its weapons attacks in the following turn. Multiple hits have no additional effect.

Mine Clearance: Reduces minefield density by 1.

Smoke: Each successful attack using smoke munitions adds the attacking Elements IF rating in points of smoke to the target hex. If the total points added to a hex in a single turn equals 3 or more, the attack creates light smoke (see *Fire*, p. 318)

Tandem Charge: Against infantry do half (rounded down) SRM damage. Against aerospace and battle armor Elements treat this as standard SRM ammo. Against 'Mechs, ProtoMechs, and Vehicles Roll 2D6; on a result of 10 or better, roll once on the critical hit table for the target Element.

Long Range Missiles

An Element with the LRM (LRM X/X/X/X) special ability (see p. 350) may use the alternate munitions shown below.

Swarm-I: Swarm-I attacks work the same as Swarm attacks, except that Swarm-I missiles do not attack friendly Elements.

Magnetic Pulse: Same as SRM (see above).

Mine Clearance: Same as SRM (see above).

Smoke: Same as SRM (see above).

Swarm: If the attack misses and other Elements (friend or foe) are in the target hex, randomly determine one and make a new attack against that Element. Continue randomly picking targets form the remaining Elements until the attack is successful or all Elements in the hex have been attacked.

Thunder: See *Weapon Deployed Minefields*, p. 289.

BALANCING FORCE SIZES (OPTIONAL)

Generally, each Force should field about the same number of Elements. If the Force sizes vary by more than 10 percent, their Point Values may be adjusted to compensate for the numerical advantage. To find the Adjusted Point Value (APV) of the larger Force, multiply the Point Value of that Force by the Final Force Modifier (FFM) and round normally to the nearest whole point.

To find the Adjusted Point Value (APV) of the larger Force, first determine the Final Force Modifier (FFM). Divide the number of Elements in the smaller Force (SF#) by the number of Elements in the larger Force (LF#) and round normally to two decimal places. Next, divide the number of Elements in the larger Force (LF#) by the number of Elements in the smaller Force (SF#) and round normally to two decimal places. Add the quotients together and subtract 1, the result is the FFM. Next multiply the point value of the larger Force by the FFM and round normally. This is the APV of the larger Force. The APV approximates the value of numerical advantage.

FFM = (SF# ÷ LF#) + (LF# ÷ SF#) - 1

To equally balance the Forces, one player may select different Elements or adjust the Skill Levels of his or her Force to increase or decrease its Point Value. To determine the number of points needed by the smaller Force, subtract its Point Value from the Point Value of the larger Force. To determine how many points the larger Force would need to lose to match the smaller Force, first divide the smaller Force's Point Value by the FFM and round up. Subtract this result from the larger Force's *unmodified* Point Value.

Alice, Aaron and Tim compare the number of Elements in their respective Forces. Alice has 12 Elements in her Force. Aaron has 15 and Tim has 14. Alice's Force has a Point Value of 188, Aaron's has 172 and Tim's has 177.

The number of Elements in Aaron's and Tim's Forces are both within 10 percent of each other, and do not need to be adjusted. Both Forces have a numerical advantage more than 10 percent greater than Alice's Force. To balance against Alice's Force, Aaron and Tim must modify their Forces by the Final Force Modifier, and then one Force (either theirs or Alice's) must be adjusted so that the Point Values are within 5 percent of each other.

For a game between Aaron and Alice, the value of Aaron's Force—relative to Alice's—must be determined. The FFM for Aaron's Force is 1.05: FFM = (12 ÷ 15) + (15 ÷ 12) -1. The base Point Value of Aaron's Force (172) is multiplied by the FFM to find its adjusted value: 172 x 1.05 = 180.6, which rounds up to

ALTERNATE MUNITIONS TABLE

Weapon	To-Hit Modifier	Damage Modifier
Autocannon		
Armor-Piercing	+1	+0
Flak	–2	+0
Flechette Ammo	+0	+0
Precision Ammo	‡	+0
Tracer Ammo	§	+0
I-Narc		
ECM	+0	+0
Explosive	+0	+0
Haywire	+0	+0
Narc		
Explosive	+0	+0
Short Range Missiles		
Heat Seeking (HS)	–2*	+0
Inferno	+0	††
Magnetic Pulse (MP)	+0	+0
Mine Clearance	+0	+0
Smoke	+0	+0
Tandem Charge (TC)	+0	+0
Long Range Missiles		
Follow the Leader (FTL)	+2	+1
Heat Seeking (HS)	–2*	+0
Magnetic Pulse (MP)	+0	+0
Mine Clearance	+0	+0
Semi-Guided	†	+0
Smoke	+0	+0
Swarm/I-Swarm	+0	+0
Thunder	+0	+0

*Target must be at 2 or higher on the heat scale

†If the target is successfully hit by a TAG attack in the current turn, all attacks using Semi-Guided munitions ignore the target's movement modifier.

††Convert SRM damage to Heat damage, to a max of HT2. Damage in excess of 2 points is lost.

‡Reduce target movement modifier by 2 to a minimum of zero.

§Eliminate any dusk/dawn to-hit modifiers and reduce night modifiers by 1

181. Compared to Alice's Force, Aaron's is worth 7 fewer points. As this difference is less than 5 percent, the Forces do not need to be balanced. If Alice were to battle Tim instead, the Forces would not need to be balanced as the difference in their Forces is still within five percent.

Advanced Force Balancing

For the majority of scenarios, the Forces arrayed on both sides should be roughly equivalent. Too many Elements (by either numbers or points) on one side can make for a lopsided and frustrating game. The preceding rules work for many scenarios, but can be inaccurate when Forces are comprised of vastly different Element types. While it is beyond the scope of these rules to fully cover all these possibilities, this section presents some suggestions on balancing.

Pay particular attention to differing types of Elements. Regardless of BV, a Force composed mostly of 'Mechs against a Force composed mostly of infantry is inherently not balanced. The most balanced games are those where each type of Element is represented equally on both sides. For example, if one Force has 30,000 points' worth of WarShips, the other Force should have an equivalent amount. This is not to say that a Force of DropShips and fighter squadrons cannot take on a WarShip, only that it is difficult to balance these two Forces against each other, as the WarShip is often ill-equipped to combat such opponents or vice versa.

Strict adherence to Force balancing is not desired. Players may include aerospace fighters (or any type of Element) on one side of an engagement, but not the other. However, players should remember that Point Value is an approximation only, particularly when comparing different types of Elements. As a general rule, if the following Elements are balanced (according to Point Value) for each Force, the overall game will be balanced.

- WarShips
- DropShips
- Aerospace fighters
- Ground Elements (except conventional infantry)
- Conventional infantry
- Very Large Support Vehicles

Balancing with Random Skill Ratings

Random Skill Ratings will skew the Point Value of one Force, making it difficult to balance the game. Some options, along with their pros and cons, are presented below.

- The same number of pilots—at randomly generated Skill Ratings—are made available to each Force. Though this is the easiest and fastest method, the Forces may not end up balanced as their individual Element Point Values may differ greatly.
- Total the Skill Ratings of all pilots in each Force. If the totals do not match, adjust the Force with the higher total. To do this, reduce the Skill Rating of an Element with the highest Skill Rating in the Force. Then reduce the Skill Rating of one Element with the next highest Skill Rating. Continue this process until an Element has been adjusted at each Skill Rating or until the Forces match. If the Forces do not match after an Element has been adjusted at each Skill Rating, repeat the process until the totals match; however, no Element may have its Skill Rating decreased twice, unless all Elements in the Force have already had their Skill Rating decreased. The main drawbacks to this method: it is time-consuming and may not account for a disproportionate share of "good" pilots on one side.
- Hold a pilot draft. Generate a number of pilots equal to the size of both Forces. Each player takes turns picking one pilot at a time until all pilots have been chosen. This is also very time-consuming, and if one Force has significantly better Elements than the other, the game will be unbalanced despite the even distribution of pilots.

BUILDINGS

Historically, the abundant buildings and similar obstacles in urban areas made it difficult for armored vehicles to successfully fulfill their battlefield objectives. Cities in the 31st century still cause problems for BattleMechs. Battles fought in long, narrow streets filled with buildings that block line of sight, provide enemy hiding places and offer limited protection from weapons fire require a change in tactics and operations. In urban combat, even unarmored infantry may substantially damage a BattleMech.

In *BattleForce*, a hex with buildings may be representative of a single large structure, or multiple smaller structures. For simplicity, both situations are treated the same way. Vital statistics about buildings in *BattleForce* are provided in the BattleForce Buildings Table below.

BATTLEFORCE BUILDINGS TABLE

Building Type	Additional MP Per Hex*	Construction Factor (CF)	Damage Absorbed (Infantry)	Damage Absorbed (Non-Infantry)
Light	+1	5	2	1
Medium	+2	12	4	2
Heavy	+3	27	6	3
Hardened	+4	36	8	4

*Infantry (including battle armor) and ProtoMechs only pay 1 MP to enter building hexes, regardless of the building type.

Building Types

Buildings are divided into four broad categories: Light, Medium, Heavy and Hardened. Each type of building hex is rated according to its Construction Factor (CF). This number is an approximation of how much damage the hex can sustain before being reduced to rubble.

Light: Light buildings represent groups of short, small buildings, such as tents and other temporary structures found on a battlefield, as well as small family homes, convenience stores, restaurants and the like. Light building hexes have a CF of 5.

Medium: Medium buildings represent moderate-sized buildings—warehouses, office buildings, apartment complexes and so on—that comprise the bulk of most settlements in the Inner Sphere. Medium building hexes have a CF of 12.

Heavy: Heavy buildings represent large structures, such as factories, hospitals, 'Mech hangars and such. Heavy building hexes have a CF of 27.

Hardened: Hardened buildings are combat-reinforced fortifications built to stand up in a fight. Hardened building hexes have a CF of 36.

Building Levels

Treat building levels exactly like other terrain levels for line of sight and movement, with each level of a building measuring roughly six meters high. These levels do not represent a specific number of floors, but rather are an abstraction of the building's interior.

This means that even though a 'Mech Unit stands two levels tall, when inside a building hex it only occupies a single level at a time. However, it still is considered to rise two levels above the underlying level it occupies in a building hex for purposes of LOS to any hex other than a non-adjacent building hex.

Movement Effects

Building hexes are more difficult to move through than clear terrain, as shown by the MP to Enter column on the Building Table. The additional MP cost reflects the time it takes to move around or enter each building in order to get through the hex. A Unit moving through or into a building hex does 1 point of damage to the hex for each Element in the Unit that is neither infantry nor ProtoMech.

Attacking Buildings

Buildings are remarkably easy to hit. Attacks against buildings are calculated as if the buildings had zero MP, with a –4 to-hit modifier being applied because they are immobile targets.

Attacking Elements Inside Buildings

Whenever a Unit is in a building hex, the structures filling that area afford a level of protection against attacks. This is reflected by the Damage Absorption Effect, which reduces the number of points of damage inflicted by an attack against such Units (the attack instead hits the building, reducing its CF accordingly). How much damage is absorbed and how much is suffered by Units within buildings depends largely on the target Unit's type, as described below.

Infantry: Infantry Elements inside building hexes may *not* be attacked directly. Instead, the attacker must fire on the building hex and rely on collateral damage to injure the infantry. This damage will be equal to the Damage Value of the successful attack, minus the Damage Absorption Effect of the building as it applies to infantry Units (see the BattleForce Buildings Table). All infantry Elements inside a building hex attacked in this fashion receive the same reduced damage.

Non-Infantry: Non-infantry Elements inside building hexes may be attacked directly, but the building hex will absorb damage as shown on the Building Damage Absorption Table. No additional modifiers apply for this type of attack, but the building's Damage Absorption Effect value—this time for non-infantry—must be subtracted from the Damage Value of the attack that was delivered (the Damage Absorption Effect is applied to the building).

Attacks From the Same Hex: If attacker and target are inside the same building hex, reduce the building's Damage Absorption Effect by half (round down)

Climbing/Standing on Buildings

A 'Mech, ProtoMech or infantry Unit can move to the roof of a building rather than staying on the ground in order to gain a better vantage point over the battlefield. BattleMechs climb the outside of buildings just like any other terrain level, meaning they can ascend or descend differences of two levels per hex at a cost of 1 MP per level changed. Jump-capable Units may jump to the roof of a building, provided they have sufficient Jumping MP. 'Mechs may not change levels once inside a building hex.

Infantry and ProtoMechs may move between levels inside a building for a cost of 1 MP per level ascended or descended.

Each level of a building hex can support its current CF in Element weight. Refer to the Weight /Size Table (see p. 356) to determine the weight of each Element. If the total weight of all Elements on a given level of a building hex exceeds the building's CF, the building collapses. (If an Element's Total Weight is not determined—such as for Units that use a size rating rather than weight—find the actual tonnage for all such Elements in the Unit and divide the result by 10 to determine whether the building's CF can support it.)

Collapse

Damage reduces a building's Construction Factor. Regardless of the current CF, the type of building remains unchanged. Therefore, a Heavy building with 3 CF remaining is still a Heavy building. When the CF in a hex is reduced to zero, the building (or portion of a larger building in that hex) collapses. Any Unit in the hex or atop a building hex when the building collapses will take damage.

COLLAPSE DAMAGE TABLE

Building Type	Damage*
Light	1
Medium	2
Heavy	3
Hardened	4

*Per 4 full levels of building.

When a building collapses, infantry and battle armor Units in the hex are automatically destroyed. All other Elements inside suffer damage as shown on the Collapse Damage Table. Units atop a building when it collapses suffer this damage plus 1 additional point.

A Unit that causes a building to collapse when moving out of it takes no damage from the collapse.

Eric's 'Mech lance has taken shelter in a 7-level Heavy building hex. With 20 CF remaining, the building hex had already sustained some damage when Eric's Unit entered. Entering the building hex reduced its CF to 16 (1 point of damage for each of the 4 'Mech Elements in Eric's lance). Eric did significant damage to Tom's Forces during the Combat Phase, but now it's his opponent's turn.

Tom has a heavy 'Mech lance 3 hexes from the building hex. His first Element, a Thunderbolt-7M, *scores a hit. At medium range, the* Thunderbolt *does 4 points of damage. Looking at the Building Damage Absorption Table, Tom sees the Heavy building will absorb 3 of those 4 points. The remaining 1 point of damage hits the target Element. The building is now down to 13 CF.*

Tom's next Element, a War Dog, *opens up. It also does 4 points of damage at medium range: 1 more to Eric's Element and 3 more to the building, reducing its CF to 10. Tom's third Element, a* Sunder-*O, attacks. When Tom declared this attack, he noted that the* Sunder *would overheat by its full OV—in this case 1 point. At medium range, the overheated* Sunder *hits for a staggering 6 points of damage. The building is now reduced to 7 CF, and the target Element takes 3 points of damage.*

Tom's final Element, a Hunchback-*4G, attacks. At medium range it does 3 points of damage. None of the damage gets through to Eric's Elements. The building is reduced to 4 CF.*

Eric is lucky that the building didn't collapse. If it had, each of his Elements would have taken 3 additional points of damage. If the building were 8 levels tall (instead of 7) and collapsed, each of Eric's Elements would take 6 points of damage.

Walls

Walls may be erected along any hexside of a hex (up to and including all 6 hexsides). Walls may have levels just like buildings, though walls are rarely more than 3 levels high. Walls have the same types and CF ratings as buildings, and Elements must pay the same MV penalties for any walled hexside they cross. For example, a hex with light walls on two sides would cost 1 additional MV to enter, and 1 additional MV to exit, assuming the Element entered and exited the hex by crossing the walls. Walls may be attacked and take damage just like buildings.

Walls may provide the same damage absorption as an equivalent type of building (and are damaged by attacks in the same manner), if all of the following conditions are met:

- The target Element must be adjacent to the wall, either in the same hex or in an adjacent hex.
- LOS must exist between the attacker and target. If the wall blocks LOS, it takes the full damage of any attacks made against it.
- LOS between attacker and target must cross a walled hexside.

DROPPING TROOPS

There are five ways to deliver troops to the battlefield. The first method—usually preferred by the soldiers—is covered in the standard rules: landing the transport Element and disembarking (see p. 325). For a variety of reasons—not least of which being the safety of the transport—landing is not always an option. The remaining four methods (each described in detail separately below) are: high-altitude drop, low-altitude drop, space drop for orbital insertion and zipline (or static-line) drop. Of these, high-altitude drops are the most accurate and safest for the troops, while orbital drops are the riskiest.

All drops require that the transport Element be able to transport the Element type being dropped. Additionally, if the transport Element does not have the door capacity to drop the entire Unit (e.g. lance, Star or Level II) in one turn, the Unit must be split or detached to drop. Only jump-capable Elements, or Elements equipped with jump packs or drop chutes, may be dropped. Dropped Units always land at the end of the Aerospace Movement Phase in the appropriate turn.

A dropped Unit may not move or attack in the turn in which it is dropped, but attacks against it suffer a +3 target movement modifier. A Unit that enters prohibited terrain as a result of a drop is destroyed.

A Unit that scatters into a hex where it would violate the stacking limit is displaced one hex closer to its original destination. Continue displacing the dropping Unit until it finds a hex where it won't violate the stacking rules, or reaches its original destination hex.

High Altitude Drop

Many commanders prefer a high-altitude drop, as it keeps the transport relatively safe and protects the dropped troops from the dangers of reentry. The transport Element picks a target ground hex on the High Altitude Map in which the dropped Unit will land. The transport must end its turn on the High Altitude Map in a hex above the target hex.

The Unit is placed on the High Altitude Map in the same hex as the transport Element and falls one high-altitude level each turn in which there is a Space Movement Phase until it reaches the ground hex. At that point, a final destination hex on the ground map is chosen. The Unit spends one turn falling on the Low Altitude Map and then lands.

If the orientation of the mapsheet is such that a straight path to the ground hex is not available, the Unit must alternate moving forward and to the left and then forward and to the right so that it traces a zig-zag path to the ground hex.

Roll 2D6 for each dropped Unit. The target number is 5. If the roll is successful, the Unit lands in the target hex and chooses its facing. If roll is unsuccessful, the Unit takes 1 point of damage and scatters per the Dive-Bombing Scatter Diagram (see p. 235). Determine the Unit's facing at random.

Modified Drop Times: Double the fall rate for each full .5 of gravity above standard. Halve the fall rate for each full .5 of gravity below standard. Double the fall rate if the Unit is dropped in vacuum or on to a planet with thin or trace atmosphere.

Attacks Against Dropping Units: Standard air-to-air attacks may be made against dropping Units, per the normal air-to-air combat rules. The dropping Unit does not get an angle of attack modifier.

Attacks by Dropping Units: Dropping Units may make attacks while they are on the High Altitude Map. No attacks may be made during the final turn of the drop (which is spent on the Low Altitude Map). The Unit's facing is such that its back is always toward space. If the orientation of the High Altitude Map provides two choices for the dropping Unit's facing, the controlling player picks the facing at drop time, and it remains unchanged for the duration of the descent. All attacks made by a dropping Element suffer an additional +5 to-hit modifier.

Low Altitude Drop

A low-altitude drop quickly delivers Units to the battlefield, but exposes them to additional risks. The aerospace Element must be stationary (have a Velocity of zero) and must be operating on the Low Altitude Map (at any altitude). The transport Element picks a target hex on the ground map (which may not contain another Unit) in which the dropped Unit will land.

Roll 2D6 for each dropped Unit. The target number is 5. If the roll is successful, the Unit lands in the target hex and chooses its facing. If roll is unsuccessful, the Unit takes 1 point of damage and scatters per the Dive-Bombing Scatter Diagram (see p. 313). Determine the Unit's facing at random.

Space Drop for Orbital Insertion

An orbital drop exposes Units to additional risks as they must enter the atmosphere. The transport Element picks a target ground hex on the High Altitude Map in which the dropped Unit will land. The transport must end its turn on the High Altitude Map in a hex above the target hex and it must be within 10 hexes of the space/atmosphere interface.

To protect the Elements, they are encased in a drop cocoon. The cocoon can take 3 points of damage before being destroyed. If the cocoon is destroyed before the Element enters the space/atmosphere interface, the Element is automatically destroyed. Otherwise, roll 2D6 for each Element when it reaches the space/atmosphere interface. If the result is 5 or more, there are no additional effects. If the result is 4 or less, subtract the number rolled from 8 and apply that many points of damage to the Element (starting with the cocoon and continuing to the Element if applicable).

The Unit is placed on the High Altitude Map in the same hex as the transport Element and falls one orbital level each turn in which there is a Space Movement Phase until it reaches the space/atmosphere interface. At that time, the cocoon jettisons and the drop continues as if it were a high-altitude drop.

Modified Drop Times: Double the fall rate for each full .5 of gravity above standard. Halve the fall rate for each full .5 of gravity below standard.

Attacks Against Dropping Units: Standard space attacks may be made against dropping Units, per the normal combat rules. The dropping Unit does not get an angle of attack modifier.

Attacks by Dropping Units: Dropping Units may not make attacks until their cocoons are jettisoned.

Zipline Drop

To perform a zipline (or static-line) drop, the aerospace Element must be in motion (have a Velocity greater than zero) and must be operating on the Low Altitude Map (at any altitude). The transport Element picks a target hex on the ground map in which the dropped Unit will land. The transport must fly over or end its turn in the target hex.

Roll 2D6 for each dropped Unit. The target number is 5 plus the velocity of the dropping Element. If the roll is successful, the Unit lands in the target hex and chooses its facing. If roll is unsuccessful, the Unit takes 1 point of damage and scatters per the Altitude Bombing Scatter Diagram (see p. 235). Determine the Unit's facing at random.

In the Zipline Diagram (see p. 315), Aaron's Conquistador *DropShip is flying over the ground map at a Velocity of 2. Among other special abilities, it has MT24D4 and VT12HD1/IT80D1. In a bold move, Aaron announces his intention to zipline drop multiple Units during this turn. The* Conquistador *is capable of dropping all 24 of its 'Mech Elements during a single turn (4 doors x 6 Elements per door). It also has a shared bay door that is used by vehicle and infantry Elements. Vehicles cannot be zipline-dropped, but Aaron can use the bay door to drop a combined-arms Unit consisting of 2 battle armor and 2 jump infantry Elements.*

Aaron decides to drop 2 'Mech lances and his combined-arms infantry Unit. He nominates Hexes A and B for the 'Mechs and Hex C for the infantry.

The base roll needed to land the Unit on target is 5, modified by the Velocity of his Conquistador *(2). This gives Aaron a final target number of 7. For the first 'Mech Unit, he rolls a 9. The lance lands on target.*

For the second 'Mech Unit, he rolls a 4. That Unit will scatter using the Altitude Bombing Scatter Diagram. Aaron first aligns the scatter diagram to his direction of flight, mentally noting that a result of 3 or 4 will scatter the Unit toward the hex in which his Conquistador *ended its movement. He rolls a 5 and then a 3. The Unit lands in Hex D. Aaron rolls a third time to determine its facing. He gets a 4 and aligns the Unit to face Hex E.*

For the combined arms infantry Unit, Aaron rolls a 7. It too will scatter. Aaron rolls a 1, indicating it will scatter toward Hex F. Unfortunately, Lady Luck has abandoned Aaron. He rolls another 1, indicating his infantry Unit will land in Hex F. Unfortunately for the infantry, Hex F is also prohibited terrain. Aaron's infantry Unit is destroyed. If his battle armor Elements had the UMU special ability, they would survive, but the jump infantry would still be destroyed.

ECM/ECCM

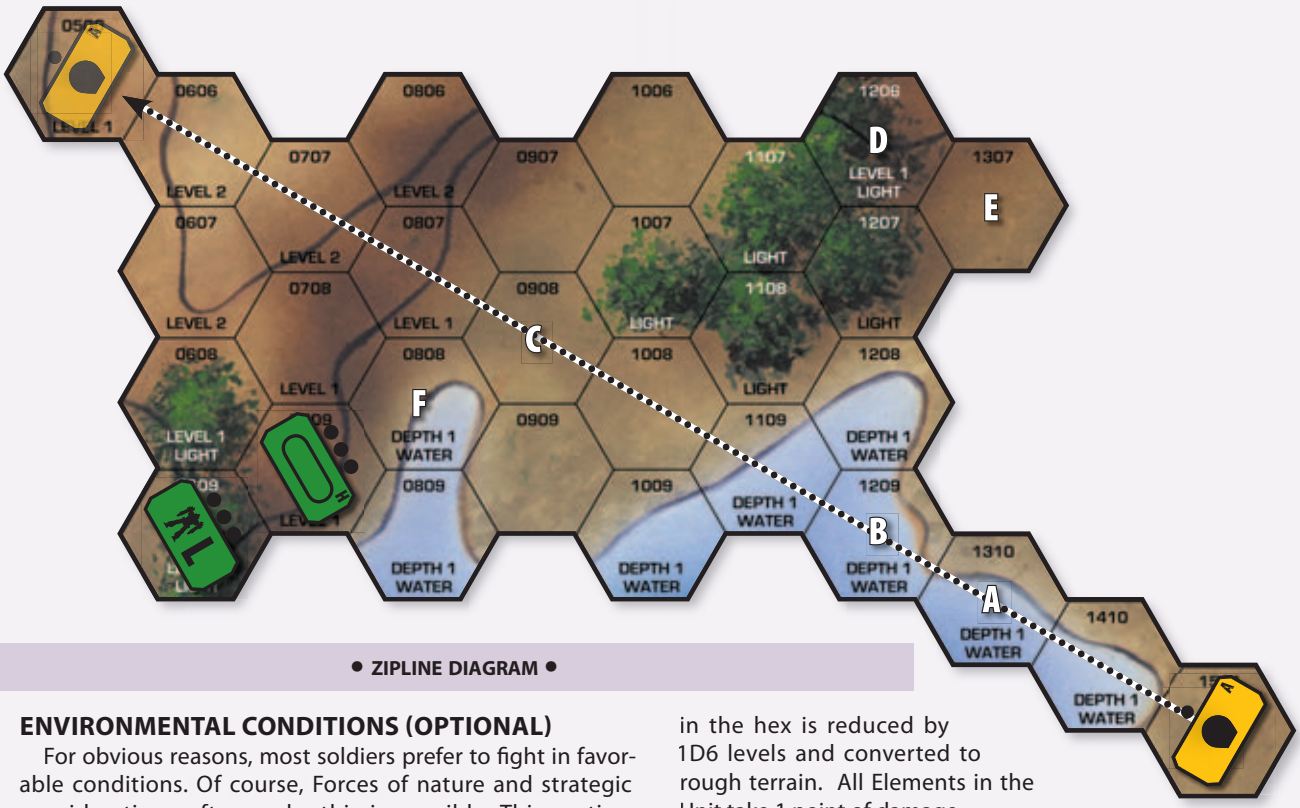
BattleForce Elements with the ECM, Angel ECM (AECM), and Watchdog (WAT) special abilities may set their system to ECCM (Electronic Counter-Countermeasures) or Standard ECM in the end phase of any turn. While in ECCM mode, the ECM suite completely eliminates the effects of any hostile ECM within its range, unless multiple systems are present. If multiple ECM systems create overlapping bubbles it is necessary to determine the total value of ECM and ECCM in the effected hexes. The highest ECM total (determined by side/team) wins for that hex; thus a hex with ECM 1 and ECCM 2 would count as ECCM 1. Angel ECMs count as 2 ECM fields for this purpose and may be set to run in ECM/ECCM mode giving a value of 1 to each.

MHQ: Elements with the Mobile Headquarters (MHQ) special ability (rated 7 or higher; see p. 351) may use their communications equipment to duplicate the effects of ECM/ECCM fields, but lose *all* MHQ bonuses when operating in this mode.

Naval ECM (Optional): In *BattleForce*, naval ECM works as described in the *Advanced Aerospace Combat*, p. 97.

EJECTION/ABANDONING ELEMENTS

Ejection systems allow a MechWarrior to quickly abandon his 'Mech in time of need. During the end phase of any turn, a player may announce that his MechWarrior will eject. This takes effect immediately. Additionally, ejection systems will automatically eject the pilot of a 'Mech if the 'Mech suffers an Ammo critical hit. A player may therefore choose to turn this ejection system on or off during the end phase of any turn. Ejection systems do not function under water. Vehicles and IndustrialMechs without the Ejection Seat (ES) special ability cannot eject, though they may abandon their Element. This is declared in the End Phase and takes place immediately. Treat a pilot who has ejected or abandoned his Eelement as a foot infantry platoon with no armor and one point of structure. All electronic systems continue to function after the pilot/crew ejects or abandons.



• ZIPLINE DIAGRAM •

ENVIRONMENTAL CONDITIONS (OPTIONAL)

For obvious reasons, most soldiers prefer to fight in favorable conditions. Of course, Forces of nature and strategic considerations often make this impossible. This section describes a variety of environmental conditions that may be introduced for added variations of game play. Keep in mind, these are abstractions designed to enhance the game and are not meant to represent actual environmental conditions.

Darkness

Fighting at night imposes to-hit modifiers (see Advanced Combat Modifiers Table, p. 283) unless an Element has the Searchlight (SRCH) special ability. Elements with this ability may turn their searchlights on or off during the End Phase of any turn.

A searchlight illuminates all Elements in a target hex, negating nighttime to-hit modifiers for any attacks against this target. All Elements in a hex where a searchlight is in use are also illuminated.

Aerospace Elements in space never use a modifier for darkness and are not illuminated by searchlights.

Earthquake

An earthquake affects all Elements on the battlefield. Earthquakes may be "scheduled" to occur during a given turn either by nominating a particular turn, or by rolling 2D6 to determine a turn in which they will occur. Alternatively, they may occur entirely at random. To randomly create an earthquake, roll 2D6 during the End Phase of each turn. On a result of 12, an earthquake occurs.

Roll 2D6 to determine the approximate strength of the earthquake. If the result is 8 or greater, all ground Elements take 1 point of damage. If the result is a 12, in addition to the damage, a fissure opens up.

Fissures: Roll 2D6 for every ground Unit on the battlefield. On a result of 2, a fissure opens beneath the Unit. The terrain in the hex is reduced by 1D6 levels and converted to rough terrain. All Elements in the Unit take 1 point of damage.

Fog

Fog adds +1 MV to the cost to enter any hex. Fog may cover any number of hexes up to the entire battlefield.

Gravity

Operating outside of standard gravity may speed up or slow down an Element, though an Element's MV may never be reduced to zero as a result of gravity effects. To determine the new MV rating for an Element in non-standard gravity, divide the Element's MV by the planet's G rating and round normally. For example, an Element with an MV of 6 on a planet with 0.7 standard gravity would have an MV of 9 (6 / 0.7 = 8.57, which rounds to 9).

If the gravity effects provide an Element with extra MV, it may use that MV for up to two turns in a row without any detrimental effects. If used for a third turn, the Element automatically suffers an MP critical hit after moving (if applicable).

Temperature

Extremes of hot or cold may prevent certain Elements from operating on the battlefield. For simplicity, advanced *BattleForce* uses three temperature ranges: Cold, Normal and Hot. Normal temperatures have no effect on game play.

Cold: Conventional infantry Elements operating in cold temperatures suffer 1 point of damage every five turns. Elements capable of overheating may reduce the heat generated from overheating by 1.

Hot: Conventional infantry Elements operating in hot temperatures suffer 1 point of damage every five turns. Elements capable of overheating automatically overheat by 1 (without doing any additional damage) any time they make a weapon

attack. Non-infantry Elements incapable of overheating reduce their MV by 1.

Tornado

A tornado can affect multiple Elements on multiple mapsheets, but may only occur when the Wind Force indicates a storm. Roll 2D6 during the End Phase of each turn where this situation exists. On a result of 12, a tornado touches down.

When this happens, roll 2D6 to determine how many turns the tornado will remain on the field. Roll 2D6 again and consult the Tornado Force Rating Table to determine the tornado's Force rating. Tornados do damage to Elements equal to their Force Rating. Multi-hex Elements only suffer damage once per hit per movement roll. If a tornado moves through two hexes of a multi-hex Element on one movement roll, the Element only takes damage once. If it moves through the same Element on two separate movement rolls, the Element takes damage twice. Tornados do damage to Terrain Factors and Construction Factors equal to their Force Rating times 3. Damage done by a tornado takes place immediately in the End Phase. All other non-water and non-paved hexes are converted to rough terrain.

Randomly determine a mapsheet (or 15 x 17-hex area if mapsheets are not in use). Next, roll 3D6 to determine the column of hexes in which the tornado will appear. If the number rolled exceeds the number of columns available, subtract the number of columns on that side from the total rolled and use that result. Next, randomly determine a corresponding row using the same process. Place a counter in the hex determined.

TORNADO FORCE RATING TABLE

2D6 Roll	Tornado F-Rating
2	1
3	1
4	2
5	2
6	2
7	3
8	3
9	3
10	3
11	4
12	5

The tornado moves in the End Phase of every subsequent turn, until its time is elapsed. Roll 1D6 to determine the number of movement rolls to make. Next, roll 1D6 to determine a direction of travel, and then 1D6 to determine the number of hexes moved, as if the tornado were a scattering dive-bomb attack. If a tornado moves off a hill, it will skip a number of ground hexes equal to the height of the hill before touching down again. If that distance is further than the number of hexes indicated in the movement roll, the tornado still moves to this position. Movement continues as normal after that.

In the Tornado Diagram (see p. 317), a tornado has touched down on Caleb's BattleForce 2 Map. First, Caleb rolls 2D6 and gets a 10. This determines how many turns the tornado will be on the map. Next, he rolls 2D6 to determine the Force Rating of the tornado and gets an 11; a very powerful F-4 tornado. Caleb then rolls 3D6 to determine the column in which the tornado will appear, getting a 13. Finally, Caleb rolls 3D6 to determine the corresponding row. He gets a 7, and so the tornado will first touch down in Hex 1307.

Now Caleb rolls 1D6 to see how many movement rolls he will have to make for the tornado. He gets a 3. His first movement roll indicates Direction 5 for 4 hexes. The tornado does 12 points of damage to the light woods in Hex 1207, and 12 points of damage to the light woods in Hex 1108. It then converts hexes 1008 and 0909 to rough terrain. The next movement roll indicates Direction 6 for 3 hexes. The tornado converts Hex 0808 to rough terrain, damages the woods in Hex 0708 and converts the hill in Hex 0607 to rough terrain (it does not change the level of the hill). Additionally, it does 4 points of damage to every vehicle Element in the lance located there. The final movement roll indicates Direction 1 for 4 hexes. The tornado moves up to Level 2, damaging the woods in Hex 0606. Then it moves to Hex 0605, which it converts to rough terrain. The tornado now skips off the Level 3 hill, jumping over hexes 0604 and 0603 (where it would have ended its movement if not for the hill), and lands in Hex 0602, converting it to rough terrain as well.

As Caleb rolled 10 turns' worth of tornado, he will have a lot of rolls to make in the coming turns.

Wind

A cool breeze is often a boon to soldiers, but strong winds can create significant havoc. The Determining Prevailing Wind Table (see below) provides a random method for determining relative wind strength, or players may choose a particular Wind Force.

Wind Force 1: Conventional infantry Elements with the "f" movement mode lose 1 MV. If this reduces their MV to zero, they may either move or attack, but not both in the same turn.

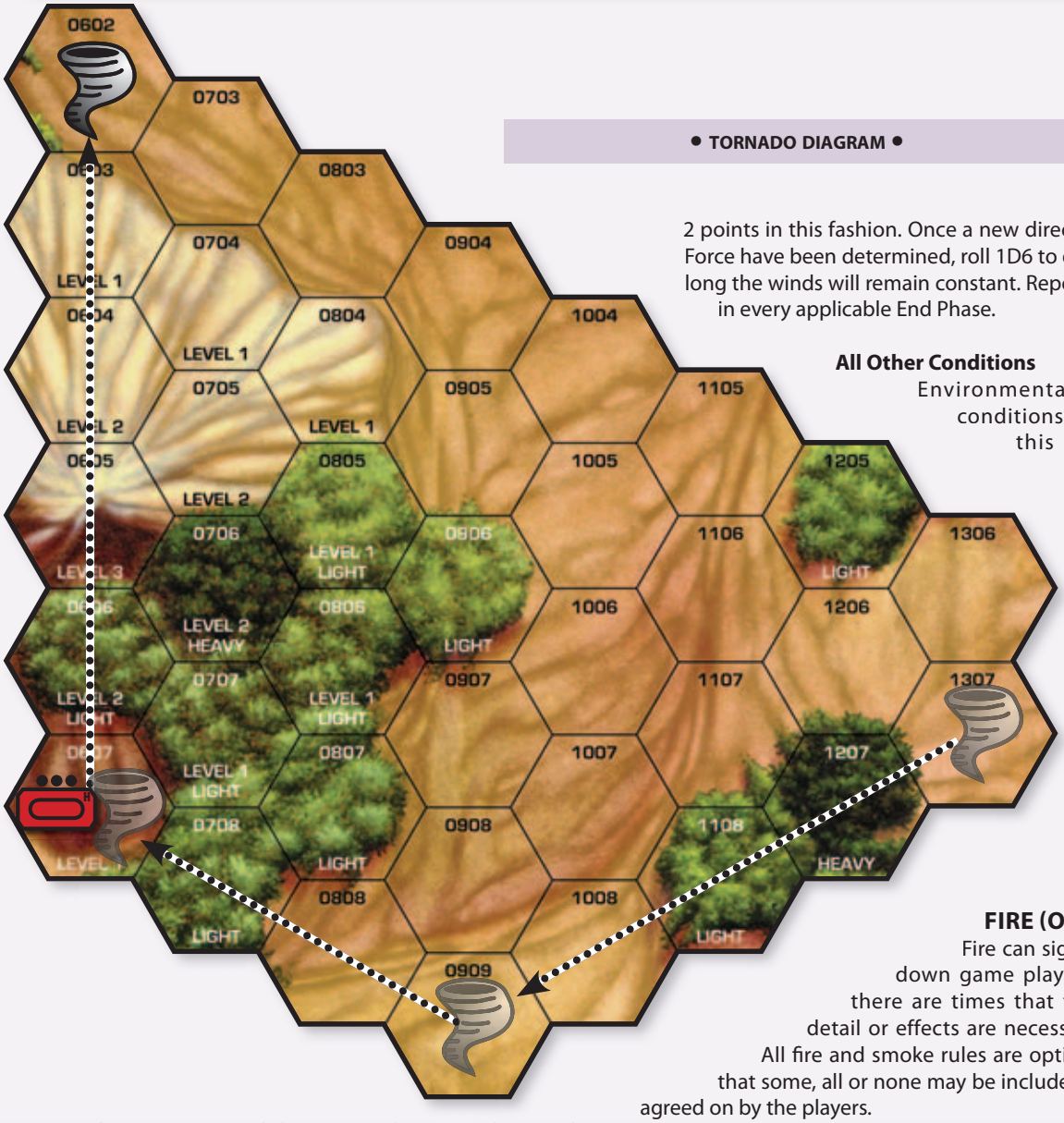
Wind Force 2: Conventional infantry Elements with the "f" or "j" movement mode lose 1 MV. If this reduces their MV to zero, they may either move or attack, but not both in the same turn.

Wind Force 3: All Elements suffer a +1 to-hit modifier for weapon attacks. Airships lose 1 TP. Battle armor Elements lose 1 MV, conventional infantry Elements lose 2 MV. If an infantry or battle armor Element's MV is reduced to zero, it may either move or attack, but not both in the same turn.

Wind Force 4: All Elements suffer a +2 to-hit modifier for weapon attacks. Airships and conventional infantry may not operate in a storm. If already deployed in these conditions, apply 1 point of damage every turn until the Element moves into a building. These Elements may move 1 hex each turn using the minimum forward movement rule. Battle armor loses 1 MV (total, not additional). If this reduces their MV to zero, they may either move or attack, but not both in the same turn.

DETERMINING PREVAILING WIND TABLE

1D6 Roll	Wind Type	Wind Force
1-2	None	0
3	Light Gale	1
4	Moderate Gale	2
5	Strong Gale	3
6	Storm	4



• TORNADO DIAGRAM •

Wind Direction: Wind direction is determined using the Dive-Bombing Scatter Diagram (see p. 313). Roll 1D6 and refer to the diagram to determine the direction the wind is blowing.

Variable Winds: The simplest way to use wind is with a fixed direction and Force; however, variable winds can make for a more interesting game. To vary the wind direction, choose one of the following options.

- Roll 1D6 in the End Phase of each turn. On a result of 1, the wind direction moves one hexside clockwise. On a result of 6, the wind direction moves one hexside counterclockwise. Roll 1D6 in the End Phase of each turn. On a result of 1, the Wind Force is reduced by one. On a result of 6, the Wind Force is increased by one.
- Determine the initial Wind Force and direction at the start of the game, then roll 1D6. This is the number of turns the wind will remain constant. During the End Phase of the final turn, roll to determine a new wind direction and level. The Wind Force cannot increase by more than 2 points in this fashion. Once a new direction and Wind Force have been determined, roll 1D6 to determine how long the winds will remain constant. Repeat this process in every applicable End Phase.

All Other Conditions

Environmental (planetary) conditions not listed in this section have no additional effects beyond the to-hit modifier they impose (see Advanced To-Hit Modifiers Table, p. 283).

FIRE (OPTIONAL)

Fire can significantly slow down game play. Nevertheless, there are times that the additional detail or effects are necessary or desired. All fire and smoke rules are optional, meaning that some, all or none may be included in a game as agreed on by the players.

There are two types of fires in *BattleForce*: intentional and accidental. Both are resolved by a 2D6 roll. With the right equipment, fires may be started in virtually any terrain. The Fire Starting Table (see p. 318) shows the target numbers for starting fires in all types of hexes based on the damage of the attack. The number to the left of the slash is the chance for starting an intentional fire, the number to the right the chance for starting one accidentally. The target number is modified as shown. Inferno attacks automatically start fires. Fires automatically require the use of prevailing wind (see *Environmental Conditions*, p. 315.)

Fire reduces the Construction Factor or Terrain Factor of any terrain features (buildings, woods, etc. but *not* the hex itself) in the hex in which it is burning by 2 points every turn. When either factor is reduced to zero, the fire burns out. If the hex set ablaze does not contain any terrain features, the fire burns out after one turn.

Smoke

If the wind is calm, smoke only appears in the hex containing the fire. Otherwise, in the End Phase of the turn after a fire starts, smoke appears in the hexes downwind as shown on the Fire and Smoke Diagram (see p. 319). Smoke will persist for two turns after a fire burns out, or until dissipated, whichever is longer. As long as a fire burns it continues to create smoke in the downwind hexes.

Light and Heavy Smoke: Heavy smoke is created by infernos, burning ultra-heavy woods or jungle hexes, or heavy or hardened building hexes. All other fires create light smoke. Light smoke rises 1 level above the underlying terrain and affects LOS by adding a +1 to-hit modifier. Heavy smoke rises 2 levels above the underlying terrain and adds a +2 to-hit modifier.

Drifting Smoke: Smoke may drift across the battlefield in the direction of the prevailing wind. The drift rate is 1 hex per Wind Force, up to a maximum of 3. Smoke may drift for a number of hexes equal to 3 times the Wind Force. When it reaches this distance, it automatically dissipates. If smoke drifts into a hex that already contains smoke, the individual "clouds" combine to form one new "cloud." If two light smoke "clouds" combine in this fashion, they create heavy smoke. If a light and a heavy or two heavy "clouds" combine, the result is heavy smoke.

Dissipating Smoke: Each hex of smoke may dissipate during the End Phase of any turn after the one in which it appeared. Roll 2D6 and add 1 for Moderate Winds, 2 for Gale Winds, or 5 Storm winds, and the number of hexes the smoke is away from the fire. If the result is 10 or more, the smoke is reduced from heavy to light. If the smoke is already light, it dissipates.

Shifting Winds: If the winds change strength and/or direction, smoke must be moved according to the new direction and strength. First, immediately place 3 hexes of smoke in the Wind Force 1 hexes downwind from the fire. Then, starting with the smoke furthest from the fire, move each hex of smoke one hex toward the new wind direction. This may result in multiple hexes of smoke moving into the same hex, thereby reducing the overall amount of smoke on the board. Continue moving smoke in this fashion until it is completely aligned with the new wind direction.

Spreading Fires

In the End Phase of any turn after a fire starts in a given hex, it may spread to a flammable hex downwind as if the hex was hit by an intentional weapons attack. Fire may skip a number of non-flammable hexes equal to the Wind Force; however, each hex away from the fire adds a +3 modifier to the roll to set a fire in the destination hex. Additionally, each hex of fire may not spread to more than 3 additional hexes each turn. Hexes that are directly downwind are the easiest for a fire to spread to, though it may spread to hexes that are obliquely downwind (one hexside left or right of the wind direction).

Resolving Fire and Smoke Effects

The effects of smoke and fire are resolved as follows:

- Check for smoke dissipation.
- Drift smoke.
- Check to see if the fire spreads.
- Add new smoke from existing fires.
- Check to see if the fire burns out (including any new fires)



• FIRE AND SMOKE EXAMPLE DIAGRAM •

Fire and Elements

Elements that move through a burning hex build up 1 point of heat—if they track heat—or suffer 1 point of damage if they do not. Multi-hex Elements take 1 point of damage per hex exposed to the fire. Elements with the Fire Resistant (FR) special ability do not take damage from fire and it has no effect on DropShips, but may set mobile structures ablaze if they enter a burning hex. In this event, roll 2D6. On a roll of 12, the mobile structure catches fire.

Putting out Fires

4 points of damage from an area effect attack will put out a fire. Infantry (or battle armor) Elements in an adjacent hex may engage in firefighting operations. They may not attack while firefighting. Roll 2D6 in the end phase of the turn, applying a -1 modifier to the target number of 10 for each additional Element engaged in firefighting. If the roll is successful, the fire is extinguished.

In Turn 1, in the Fire and Smoke Example Diagram above, an Element from Nanook's Smoke Jaguar Star in Hex A fires at the woods in Hex B with the intent of starting a fire. Consulting the Firestarting Table, Nanook sees that he'll need to roll a 6 or better to ignite the hex. He rolls a 7, starting a fire easily in the dense foliage. Nanook now rolls to determine the prevailing wind direction, using the Dive-Bombing Scatter Table on page 235. Nanook rolls a 3 for wind direction. Consulting the Prevailing Wind Table, he rolls 1D6 and gets a 4, indicating a Wind Force of 2 (Moderate).

FIRE STARTING TABLE

Water	Clear*	Paved†	Rough‡	Jungle	Woods	Building	Industrial	Magma
—	11/11	—	12/12	7/10	6/9	9/10	4/6	4/6

MODIFIERS

Environmental Condition††	Modifier
Deep Snow	+3
Geyser	+3
Ice	+4
Mud	+5
Rapids	N/A§
Swamp	+5
Blizzard	+2
Rainfall, Torrential	+2
Rainfall, Light, Moderate, Heavy	+1
Snowfall, Sleet	+2
Winds, Moderate	+1
Winds, Storm	+2
Winds, Strong Gale	+4
Tornado	No Fire§§

Weapon Type	Modifier
Indirect Fire	+1
Heat‡‡	–2
Inferno	Automatic§

Fire Spreading	Modifier
Directly Downwind	+1
Obliquely Downwind	+3
Crossing Non-Flammable Hex	+3 (per hex)

*Includes Tundra. Fires in these hexes burn for 1D6 turns and then go out.
†Includes Road, Bridge, Rail, and Sand. These hexes are non-flammable.
††All modifiers are cumulative.
‡Includes Rubble
‡‡Attacks with the Heat (HT#) special ability may set intentional fires to clear and rough hexes on a result of 9 or 10, respectively. Accidental fires may be started on a 10 and 11 respectively.
§Infernos automatically start fires, except in rapids. Fires may only burn on the surface of a water hex.
§§Infernos burn out after 1 turn.

At the end of Turn 2, the fire burning in Hex B has reduced the hex's TF from 15 to 13. Light smoke appears in hexes C, D, and E. Additionally, the fire may spread to these hexes, all of which are light woods. Nanook rolls 2D6 for each hex. Hex C is obliquely downwind, and so it requires a 10 or better to ignite (Base 6, +1 moderate wind, +3 obliquely downwind). Nanook rolls a 4. Hex D is directly downwind and will ignite on an 8 or better (Base 6, +1 moderate wind, +1 directly downwind) or better. Nanook rolls a 9, setting it ablaze. Hex E is also obliquely downwind. Nanook rolls a 10, setting it on fire as well.

A lot happens at the end of Turn 3.

- *The fire in Hex B reduces the TF there to 11.*
- *The fires in Hexes C and D reduce their TF to 13.*
- *Nanook checks to see if the smoke in hexes C, D, and E dissipates. He will roll 2D6 for each of the hexes, adding a total of 4 to his roll (3 for the distance from the fire and 1 for the Wind Force). If any roll result is 10 or more, the smoke dissipates. Nanook's rolls are: 3, 6 and 7. With the +4 modifier, the totals are enough to dissipate the smoke in Hexes D and E.*
- *Smoke from Hex D drifts to Hex C1*
- *New smoke from the fire in Hex A fills the C, D, and E hexes.*
- *Now, Nanook checks to see if the fires burning in Hexes B, D, and E spread. As the fire in Hex A has already spread to D, and E, Nanook only checks to see if it will spread to C. He rolls a 5,*



• FIRE AND SMOKE DIAGRAM •

which is still not enough to start C on fire. Two of the downwind hexes from E are water hexes, so fire cannot spread there. The other downwind hex from E is Hex D which is already burning, so checking there is redundant. Hex D is the only fire that may still spread, although two of its downwind hexes are also water and Hex F is a woods hex. Nanook rolls 2D6 for the obliquely downwind hex, getting a 7, as he needed a 10, it will not catch fire, but he will check again next turn.

- *The fire in hex E spreads smoke to hexes E1, E2, and D (creating heavy smoke in D). The fire in hex D spreads smoke to hexes F, F1, and E2 (creating heavy smoke in E2).*

HIDDEN UNITS

Prior to the start of play, the defender (and/or attacker, according the scenario) may hide his Units on the map. Each player must write down the number of each hex in which a Unit is hidden or otherwise record its position, and designate its facing. Hidden Units may not execute commands or issue requests for commands.

Unless the player plans to move a hidden Unit during the Movement Phase, hidden Units are not counted for purposes of determining unequal numbers of Units. If a player plans for a hidden Unit to execute a command, or benefit from another command, he must reveal that Unit during the Command Phase. If he plans to move a hidden Unit during a turn, he must reveal it at the start of his Movement Phase. If a player plans to attack using a hidden Unit, he must reveal it at the beginning of the Combat Phase.

Hiding on the Ground

Most Elements may be hidden on the ground map (including grounded airborne Units). Large, Very Large, or Super Large Support or Transport Elements, and grounded DropShips may be hidden in buildings, under water (if applicable) and in any hex if at least half of all adjacent hexes are within 1 level of their height on the battlefield. Mobile structures and airborne Elements may not be hidden. Additionally, no Unit may hide in a clear or paved (road/bridge) hex, or on the surface of a water hex. All other hexes and Element types are valid.

Detecting Hidden Ground Units: Hidden Units remain hidden until they attack or move, or until an enemy Unit moves into their hex, attempts to move into their hex, ends its movement adjacent to their hex or has the Active Probe special ability and ends its movement such that the hidden Unit is within range of the probe.

If a Unit attempts to enter a hex containing a hidden Unit, the hidden Unit is revealed. If the move would violate the stacking rules (see *Stacking*, p. 219), the Unit attempting to enter the hex ends its movement before doing so.

Hiding in Space

Aerospace Elements may hide by going dark—turning off all active sensors, powering down engines, and running with communications silence. Unless grounded on or docked with an asteroid, these Elements are not truly hidden, just very difficult to detect.

Detecting Hidden Space Units: These Units remain hidden until another Element moves within a number of hexes of their "hiding spot" equal to their weight/size class, or until they take an action (execute a command, move, attack and so on).

Surprise Attacks From Hidden Units

If an enemy Unit moves adjacent to a hidden ground Unit or within range of a hidden space Unit, the hidden Unit may immediately make a surprise attack. This attack may be augmented by overheating. The base to-hit number for the attack is the Skill Rating of the attacker, modified only for unrepaired critical hits to the attacker. Damage takes place immediately; however, the attacker cannot move, fire, execute orders or issue requests for commands for the rest of the current turn.

RANDOM SKILL RATING (OPTIONAL)

After determining the composition of each Force, the Skill Rating for Elements may be assigned or randomly generated. When randomly generating the Skill Rating, players have several options: true random, random with target experience rating, random with target tech rating, and random with target experience and tech rating. Each Force should use the same method of random generation. If random Skill Ratings are used, the Balancing Force Sizes rules (see p. 310) should not be used. Advanced Force Balancing (see p. 311) may be used instead.

Note: Players using the Aggregate Experience By Force rules should refer to page 330 before generating Skill Ratings.

RANDOM SKILL RATING TABLE

WB*	RG†	Green	Regular	Veteran	Elite	Heroic	Legendary	Skill Rating	Description
≤0	—	—	—	—	—	—	—	7	WB*
1-2	≤0	—	—	—	—	—	—	7	WB*
3-4	1-2	≤0	—	—	—	—	—	6	Really Green
5-6	3-4	1-2	≤0	—	—	—	—	5	Green
7+	5-6	3-4	1-2	≤0	—	—	—	4	Regular
—	7+	5-6	3-4	1-2	≤0	—	—	4	Regular
—	—	7+	5-6	3-4	1-2	≤0	—	3	Veteran
—	—	—	7+	5-6	3-4	1-2	≤0	2	Elite
—	—	—	—	7+	5-6	3-4	1-2	1	Heroic
—	—	—	—	—	7+	5+	3+	0	Legendary

*Wet Behind the Ears †Really Green

RANDOM EXPERIENCE TABLE

2D6 Roll	Experience Rating
2	Wet Behind the Ears
3	Really Green
4-5	Green
6-7	Regular
8-9	Veteran
10	Elite
11	Heroic
12	Legendary

FORCE SKILL RATING MODIFIERS TABLE

Force Experience Type	Modifier
Wet Behind the Ears	–3
Really Green	–2
Green	–1
Regular	+0
Veteran	+1
Elite	+2
Heroic	+3
Legendary	+4

Force Rating	Modifier
Inner Sphere	
A-Rated	+1
B, C or D-Rated	+0
F-Rated	–1
Clan	
Front Line	+1
Second Line	+0
Solahma	–1

Element Type	Modifier
Inner Sphere	
Support Vehicle	–1
All Others	+0
Clan	
MechWarrior	+1
Combat Vehicle	–1
Support Vehicle	–2
Conventional Infantry	–1
Battle Armor	+1
Conventional Fighter	–1
Small Craft	–1
All Others	+0

Generating Skills

Roll 2D6 to determine the random experience rating range for the Element. Depending on the generation method, some modifiers may apply. The experience rating of the Element determines the column on the Random Skill Ratings portion of the table used to determine the Element's actual Skill Rating. Once the column has been determined, roll 1D6; again, modifiers may apply depending on the method used. Follow the row corresponding to the die roll result across the table to the Skill column to find the Element's final Skill Rating. This may result in an Element getting a lower or higher Skill Rating than indicated by the random experience roll.

True Random: As described above with no modifiers.

Random With Target Experience Rating: Use this method when creating a Force with a desired experience rating. Roll 2D6 and apply the desired Force Experience Type modifier to the roll when consulting the Random Experience section. Find the appropriate column of the Random Skill Rating section, roll 1D6 and apply the Element Type modifier and the Force Experience modifier.

Random With Target Tech Rating: Often, the best technology is reserved for the best Units. Roll 2D6 and apply the Force Rating Modifier, then consult the Random Experience section. After finding the correct column of the Random Skill Ratings section, roll 1D6 and apply the Element Type modifier.

Random With Target Experience Rating and Target Tech Rating: To really stack the deck with incredible soldiers, roll 2D6 and apply both the Force Experience Type and Force Rating modifiers to the Random Experience section. Then roll 1D6 and apply the Element Type modifier. Consult the appropriate experience column to determine Skill Rating.

Kevin wants to randomly generate Element Skill Ratings using each available method. For his first Element—an Inner Sphere 'Mech—he uses the True Random method. Kevin rolls 2D6 and gets a 4, indicating his Element is Green. Next, he rolls 1D6 and gets a 6. Looking in the Green experience column of the Random Skill Ratings Table, he sees that will give his Element a Skill Rating of 4.

Next, Kevin generates a Skill Rating using the Random with Target Experience Rating method for an Inner Sphere Combat Vehicle. Kevin wants this Element to be Veteran, so he rolls 2D6, adding 1 (the Force Experience modifier for Veteran) to the roll. He gets a 7. Consulting the Random Experience Table, he sees that he'll be rolling on the Regular column of the Random Skill Rating section. He rolls 1D6, adds +1 for his Veteran Skill Rating modifier and +0 for his Element Type modifier. His result of 4 gives his Element a Skill Rating of 4, not quite what he was hoping for, but reasonable for a Veteran Force.

For his next Element, Kevin decides to try out the Target Tech Rating method. He's going to generate a second-line Clan Support Vehicle. First, he rolls 2D6 and applies the Force Rating modifier. He rolls a 7. Consulting the Force Rating Modifiers Table, he sees that his second-line Force adds nothing, giving him a Regular Element. Now Kevin rolls 1D6 and adds the following modifiers: +0 (Second Line) and –2 (Clan Support Vehicle), for a net modifier of –2. His roll of 4 drops to a 2 which, in the Regular column, indicates a Skill Rating of 4.

Finally, Kevin decides to generate the Skill Rating for a Heroic F-Rated Inner Sphere 'Mech using the Random With Target Experience and Target Tech Rating method. He rolls 2D6 and applies the following modifiers: +3 (Heroic Experience) and –1 (F-Rated), for a net of +2. His roll of 6 becomes an 8: Veteran Experience. Rolling on the Veteran column, he applies a –1 modifier for the F rating and a +3 modifier for Heroic, giving him a net modifier of +2. His roll of 3 is increased to 5, indicating a Skill Rating of 3.

SEPARATING ELEMENTS

Elements operate as members of a Unit in order to speed game play at the expense of flexibility. Players may elect to detach Elements from a given Unit, or split a Unit entirely into individual Elements; however, both approaches significantly affect the speed of game play as they put more Units onto the field. Additionally, it becomes more difficult to determine where the members of a Unit are for purposes of executing commands.

Detaching, splitting, and re-forming Units each costs 4 Command Points and must be done in the End Phase of a turn. Forming an Ad-Hoc Unit costs 6 Command Points and must also be done in the End Phase of a turn. However, players may begin play with any number of their Units already split or detached unless otherwise dictated by the scenario.

Detaching Elements

Up to 50 percent of a Unit may be detached for independent operations. These Elements may operate together or separately, but this decision must be made at the time the Elements are detached. For example, a standard lance may detach up to two Elements. These Elements may operate independently of each other (effectively creating three Units where previously there was one) or they may operate together (effectively creating two Units from one).

An appropriate miniature (or other counter) is added to the board to represent the detached Element, and this information is noted on the Unit's record sheet. The parent Unit's weight class must also be recalculated and it may be necessary to exchange miniatures for the parent Unit. Detached Elements move at the same time as their parent Unit, but may move and attack independently. Normal stacking limits apply for detached Elements.

Alice's command lance consists of a Barghest, Sunder, Awesome *and* Marauder. *Upon reaching one of her objectives, she decides to detach the* Sunder *and* Awesome *to hold the objective, while she presses on with the* Barghest *and* Marauder. *In the End Phase, Alice declares that she will detach the* Sunder *and* Awesome *and notes this on her record sheet. She adds a new miniature to the field to represent the* Sunder *and* Awesome.

Splitting Elements

A Unit may be split into individual Elements. In practice, this normally happens when a Unit is trapped behind enemy lines and ordered to engage in guerilla operations. In theory, it can occur for a variety of tactical or strategic reasons.

As with detaching Elements, an appropriate miniature (or other counter) is added to the board to represent each Element, and the information is noted on the Unit's record sheet. Each Element operates (moves and attacks) as a single-Element Unit.

Normal stacking limits apply for split Elements.

In an effort to quickly acquire his objectives, Aaron splits two of his Stars. He now has ten independent Units: a Mad Cat, Cauldron-Born, Nova Cat, Stooping Hawk, Black Hawk-KU *and 5 Points of Elementals. Aaron puts additional miniatures on the battlefield and notes on the record sheet that these Units have been split.*

Re-Forming Units

Ideally, Units should re-form in their original configurations. That is, detached Elements may return to their parent Units, and split Elements may reunite with the other Elements from their original Unit.

To re-form a Unit, all surviving Elements must be in the same hex during the End Phase of the current turn. The change is noted on the record sheet, and the extra miniatures are removed from the field. It may be necessary to replace the Unit's miniature if the re-Formation results in a change in its weight class.

Ad Hoc Units

Players may create Units on the fly from any available Elements. For example, two Elements from a Fire Support Lance may join with the remnants of two other lances to form a reinforced lance. This is known as forming an ad-hoc Unit. Because a new record sheet must be prepared for the Unit, doing this slows down game play and so this option should be used with caution.

Additionally, the controlling player must determine the new Unit's position in the Chain of Command. An ad-hoc Unit reports to the superior Unit that most of its Elements report to. If a majority does not exist, then any superior Unit to which an Element reported may serve as the ad-hoc Unit's superior Unit.

All Elements must be in the same hex (or adjacent hexes) during the End Phase of the current turn. A record sheet is prepared for the new Unit, and the extra miniatures are removed from the field. It may be necessary to replace the Unit's miniature if the ad-hoc Formation results in a change in its weight class.

Separation Limits (Optional)

For aesthetic or game play reasons, players may wish to impose a limit on the number of Units that may detach or split. The limit is usually the same for both Forces.

SPECIALTY INFANTRY

Tactical Operations introduced a variety of specialty infantry, most of which retain some additional abilities in *BattleForce*. This section describes each type; when not employing the abilities described below, treat these Elements as standard (i.e. conventional) infantry.

Anti-'Mech Infantry: These Elements may make a special attack against ground Elements and grounded aerospace Elements. Although this is called an anti-'Mech attack, any Element on the ground may be targeted. VTOLs and WiGEs may only be attacked if landed. The base to-hit for this attack is the attacking Element's Skill Rating +4 for conventional infantry or +1 for Battle Armor infantry. All normal modifiers from the Advanced Combat Modifiers Table (see p. 283) are applied. If the attack is successful, the Element does its normal damage and rolls once for a critical hit on the target Element. If the target Element is transporting battle armor or extended mechanized infantry, apply an additional +3 to-hit modifier.

Armored Infantry: These Elements have additional armor (see *BattleForce: Conversion Rules*, p. 342)

Beast Infantry: These Elements use the movement mode of their mounts (usually f, n, u, or v) and have additional armor.

Bridge-Building Engineers: Once per game, these Elements may build a bridge across a single hex (either spanning water or sublevels). It takes 2 turns to complete a bridge and the bridge may be either light or medium. If the Element takes any damage while building a bridge, construction takes 3 turns.

Firefighting Engineers: These Elements may put out fires from an adjacent hex on a 2D6 roll of 8+. Reduce this target number by 1 for each turn spent fighting a fire (to a max of –3), and for each additional Element engaged in fighting the same fire.

Minesweeping Engineers: Minesweepers have no special uses in *BattleForce*, they clear minefields just like standard infantry.

Sensor Engineers: These Elements are treated as standard infantry in *BattleForce*.

Trench/Fieldworks Engineers: Each turn these infantry Elements may convert a hex (except those containing water, pavement, or buildings) into a fortified hex. Attacks against infantry Elements in a fortified hex suffer an additional +2 to-hit modifier. Heat, Inferno, and Area Effect weapons ignore this modifier.

Marines: These Elements are trained in zero-G combat and provide bonuses in boarding and repelling attempts.

Mountain Troops: These Elements may climb 2 levels per turn, but otherwise are treated as standard infantry.

Paramedics: These Elements are treated as standard infantry in *BattleForce*.

Paratroops: These Elements may dismount from airborne transport Elements (including aerospace Elements) just like jump infantry.

SCUBA (Standard): Treat these Elements as if they have an MV of 1 and UMU when entering water hexes. They may not submerge below the bottom of Depth 2 water hexes.

SCUBA (Motorized): Treat these Elements as standard SCUBA infantry, except they have a MV of 2 and UMU.

TARGETING AND TRACKING SYSTEMS (OPTIONAL)

A variety of specialized targeting and tracking systems are available to most Elements (see *Design Quirks*, p. 193). These systems are engaged for the entire game and may not be turned off or adjusted (however, they may be reconfigured between battles in a campaign).

Temporary Configurations (Available to all Elements)

- **Long-Range Targeting:** Replace the normal modifiers for ranges with these: Short +1, Medium, +2, Long +3, Extreme +4.
- **Short-Range Targeting:** Replace the normal modifiers for ranges with these: Short –1, Medium +2, Long +5, Extreme +7.
- **Variable Range Targeting:** Provides an exception to the rule prohibiting changes to targeting systems. Allows an Element to switch between short-range, long-range or standard targeting during the End Phase of any turn. This ability requires specialized equipment (see *Special Abilities*, p. 342).
- **Anti-Aircraft Targeting:** Attacks against airborne Elements of any type receive a –2 to-hit modifier. All other attacks suffer an additional +1 to-hit penalty.

TERRAIN CONVERSION

Elements may use their massive firepower to raze everything in a hex. Eventually, the hex itself may be decimated. As shown on the Terrain Factor and Conversion Table, the Terrain Factor (TF) determines the number of damage points a terrain feature (or the terrain itself) can take before being damaged or destroyed. Each point of damage eliminates 1 point of TF. If any terrain features (woods, buildings, pavement and so on) are present in a hex, they must be eliminated before the hex itself may take damage. When a hex takes damage equal to its TF, the hex is reduced by one level, which players may use to create sub-levels.

Woods are reduced from one type to another before finally becoming rough terrain. Regardless of a woods hex's current Terrain Factor, its type does not change until the TF falls below

TERRAIN FACTOR AND CONVERSION TABLE

Terrain Factor	New Terrain
Clear/Rough: 200	Sub-Level 1
Deep Snow: 9	Light Snow
Dirt Road: 6	Rough*
Gravel Piles: 30	Rough
Gravel Road: 15	Rough*
Ice: 12	†
Jungle, Heavy: 32	Light Jungle
Jungle, Light: 20	Rough
Jungle, Ultra-Heavy: 45	Heavy Jungle
Light Snow: 5	Mud
Magma Crust: 9	Magma Liquid
Paved Hex: 60	Rough
Paved Road: 45	Rough*
Planted Fields: 9	Rough
Sand: 30	Sand Sub-Level 1
Sheer Cliffs: 15	‡
Tundra: 21	Rough
Woods, Heavy: 27	Light Woods
Woods, Light: 15	Rough
Woods, Ultra-Heavy: 40	Heavy Woods

*These hexes still count as road hexes, though Elements must pay 1 additional MP per hex traveled.

†If the underlying terrain is water, the hex becomes a water hex; otherwise, ice is removed from the hex and the underlying terrain remains unchanged.

‡The feature is removed from the hex.

the value of the reduced hex shown on the Terrain Factor column of the Terrain Factor and Conversion Table. For example, a heavy woods hex whose TF has been reduced to 18 points is still heavy woods.

Elements with the Saw and Engineering special abilities may use these abilities to clear woods hexes. The Element must be in the hex to be cleared. The Element forgoes its normal attacks and automatically does 3 points of damage to the woods hex.

TRANSPORTING ELEMENTS

The following rules apply to transporting Elements.

Infantry Transports

Elements with the Infantry Transport (IT#) special ability have transport compartments designed to accommodate infantry and battle armor Elements. The transport Element may carry any number of infantry or battle armor Elements as long as the total cargo requirements of these Elements do not exceed the transporting Element's infantry transport rating. The transporting and transported Elements need not belong to the same Unit, if the transport cannot carry the entire Unit, then its Elements must be split or detached (see *Separating Elements*, p. 322) if they do not belong to the same Unit as the transport.

It costs the carrying Element 1 MP to mount or dismount battle armor or infantry (aerospace Elements pay 1 Thrust Point instead). Mounting must be done at the beginning of movement. Airborne transport Elements must land to mount infantry or battle armor Elements. Movement points are spent to mount or dismount Elements before determining the available MP for the Unit.

Dismounting must be done at the end of movement. Non-aerospace, airborne transport Elements may dismount jump-capable infantry or battle armor while airborne, but must land to dismount all other Element types. Airborne aerospace Elements must land to dismount any transported Element, unless it is jump capable, in which case the Zipline Drop rules may be used (see p. 314).

While mounted, and during the turn in which it mounts, the transported Element's MP (and jumping ability or lack thereof) is ignored for purposes of determining available MP for the Unit—that is, the transported Element doesn't slow down the Unit. The transported Element may not attack and may not be directly attacked. If the transport Element is destroyed while transporting other Elements, all transported Elements are destroyed as well.

When dismounted, the infantry or battle armor's MP (and jumping ability or lack thereof) is considered for purposes of determining the Unit's available MP. A battle armor or infantry Element may attack in the turn it dismounts.

It is permissible to mount an infantry (or battle armor) Unit, move the transport, dismount the Unit, and make attacks with the Unit all in the same turn, however infantry (and battle armor) Elements may not move in the turn they dismount.

Lara's combined-arms Unit includes two conventional foot infantry platoons, 1 Maxim (infantry variant) hovercraft and one Pegasus Scout Hover Tank (3058 version). Lara's infantry are not mounted, effectively reducing her Unit's MP to 1. Each foot infantry platoon has the CAR3 special ability, meaning each requires 3 tons of transport space. During her Ground Movement Phase, Lara decides to have the infantry mount the Maxim. The Maxim has the IT12 special ability, meaning it can transport up to 12 tons of infantry. It'll have plenty of space for the foot platoons. The Maxim has an MP of 8. It spends 2 MP to mount the infantry, reducing its MP to 6 for this turn.

Next, Lara determines the available MP for her Unit. She compares the Maxim's reduced MP of 6 to the Pegasus's MP of 9, and notes that her Unit will only have 6 MP available for the remainder of this turn. Lara moves the Maxim 4 hexes straight ahead, crossing a river and entering a hex with one of her opponent's Units. She then spends 2 additional MP and dismounts both infantry platoons. Both platoons may make weapons attacks during the upcoming Combat Phase.

Mechanized Battle Armor

Battle armor Elements with the Mechanized (MEC) special ability may mount OmniMechs and OmniVehicles, allowing the battle armor to be quickly transported across the battlefield. The battle armor and Omni Element need not belong to the same Unit, but the battle armor must be split or detached (see *Separating Elements*, p. 322) if they do not belong to the same Unit.

It costs the carrying Element 1 MP to mount or dismount battle armor. Mounting must be done at the beginning of movement, dismounting at the end. Each Omni Element may only transport one battle armor Element at a time. Movement points are spent to mount or dismount Elements before determining the available MP for the Unit.

While mounted, and during the turn in which they mount, the battle armor's MP (and jumping ability or lack thereof) is ignored for purposes of determining the available MP for the Unit—that is, the battle armor doesn't slow down the Unit. The battle armor Element may not attack and may not be directly attacked. Attacks against the carrying Element may strike the battle armor, however (see *Determine and Apply Damage*, p. 228).

When dismounted, the battle armor's MP (and jumping ability or lack thereof) is considered for purposes of determining the Unit's available MP. A battle armor Unit may attack in the turn it dismounts.

Extended Mechanized Special Ability: Elements with the Extended Mechanized (XMEC) special ability may mount any type of 'Mech or vehicle (but not Fixed-Wing Support craft or aerospace Elements). The transport Element loses 1 MV as long as it transports Elements in this fashion. The remaining mechanized battle armor rules apply to them (and their transport Element) normally.

Combat: If an Element is carrying Mechanized battle armor, roll 1D6. On a result of 1–4, the carrying Element takes damage. On a result of 5–6, the Mechanized battle armor takes damage. Any remaining damage is then transferred to the carrying Element. Only a successful attack against the carrying Element can inflict damage on the battle armor.

Brian's Star consists of a Grendel B, Night Gyr Prime, Hellion C *and two Points of Elemental battle armor. He wants to quickly transport the two battle armor Elements in his Star. First, Brian looks at the MP available in his Star. The* Grendel B *has an MP of 7(j). The* Night Gyr Prime *has 4(j) and the* Hellion C *has an MP of 7. All three are OmniMechs. Brian decides to have the* Grendel *and* Hellion *carry the battle armor. It costs each 'Mech 1 MP to mount the battle armor, reducing both to 6 MP for this Movement Phase.*

Brian's Star is limited to the fastest speed of its slowest member, in this case the Night Gyr, *and will have 4 MP to spend during the Ground Movement Phase. If Brian had the* Night Gyr

carry one of the Elemental Points, his Unit would have 3 MP for the Ground Movement Phase.

Transporting Non-Infantry Elements

The following rules apply to transport Elements, DropShips and Small Craft. They do not apply to the transport of infantry Elements by Elements with the Infantry Transport (IT#) special ability (see *Infantry Transports,* p. 324).

Bays, Doors and Transport Special Abilities: These special abilities are closely linked. Elements are transported in bays, and each bay has a given number of doors. Doors are only tracked on DropShips and Large Support and transport Elements. Combat Vehicles with the Infantry Transport (IT#) special ability do not need to keep track of doors.

Each type of Element must use the appropriate type of door to enter or exit a transport Element; a 'Mech must use a 'Mech door, vehicles an vehicle door, and so on. If a door serves multiple bays (containing different types of Elements), any of those Element types may use the door. If a transport does not have a functioning door of a particular type, then Elements of that type may not enter or exit the transport Element. Each door can normally accommodate six Elements per turn.

Vehicle Elements must also be concerned with bay types. Each type of bay accommodates a particular weight class of vehicle, as shown on the Vehicle Bay Type Table.

VEHICLE BAY TYPE TABLE

Bay Type	Abbreviation	Vehicle Weight Classes Allowed
Medium	M	1 and 2
Heavy	H	1, 2, 3, 4 and Support or Transport Vehicles up to 100 tons in mass
Super-Heavy	S	1, 2, 3, 4 and any Support or Transport Vehicle up to 200 tons in mass

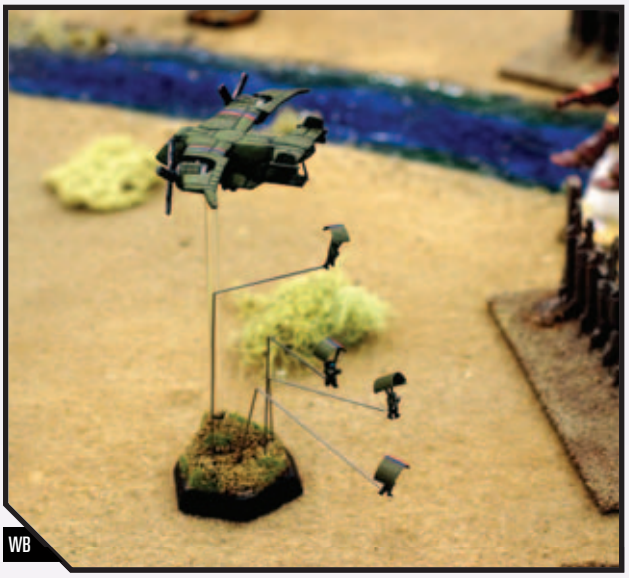
Aerospace Element Transport: Aerospace Elements (including conventional fighters) must be transported by Elements with the Aerospace Transport and/or Small Craft Transport special abilities as appropriate. Fixed-Wing Support Elements and Airships are transported as ground vehicle Elements and may not launch or recover unless the transport Element has a flight deck or helipad. Aerospace Elements may not be launched or recovered from a grounded transport unless the transport has a flight deck or helipad; otherwise they must embark and disembark.

Any weight class aerospace Element (and any size class Element up to 3, except for Airships, which may not use either) may launch or recover on a flight deck or helipad. Only one Element may launch or recover from a flight deck or helipad at a time, and only one Element may launch or recover each turn.

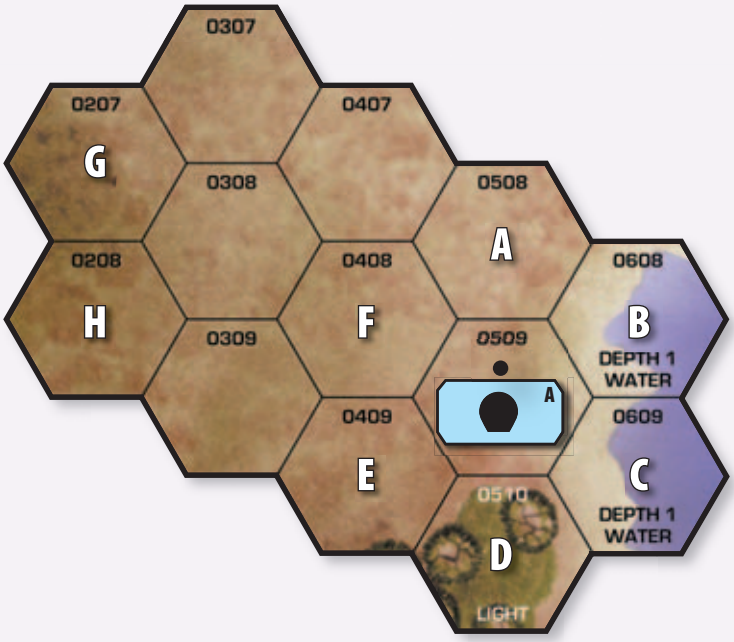
- **Launching:** It costs an aerospace Element 1 Thrust Point to launch from the transport Element. The launched Element is placed in the same hex and assumes the same velocity and heading (and altitude level, if applicable) as the transport Element.
- **Recovery:** Landing or recovery costs zero Thrust Points. To land or be recovered, the recovered Element must end its turn in the same hex as the transport Element and match the transport Element's facing and velocity.

Ground Element Transport: All non-aerospace Elements are considered ground Elements for purposes of entering or exiting a transport Element. This process is called embarking (for entering) and disembarking (for exiting). Elements may not disembark into prohibited terrain. Embarking and disembarking must be performed during the Ground Movement Phase.

- **Mounting/Embarking:** Elements may only mount from the same hex as the transport Element, or any adjacent hex if the transport Element has the Large (LG) special ability. It costs the mounting Element 1 MP to enter the transport Element. If any Elements do not have sufficient MP to mount, or the transport Element does not have sufficient doors to accommodate the Unit in one turn, some Elements will be stranded outside the transport Element.
- **Dismounting/Disembarking:** It costs the dismounting Element 1 MP to exit the transport Element (it must also pay the MP cost for the dismounting hex). The dismounting Element is placed in the same hex as the transport Element, or any adjacent hex if the transport Element has the Large (LG) special ability. If the entire Unit is unable to dismount, some Elements will be stranded inside the transport Element. All Elements of a dismounting Unit must be placed in the same hex unless the Unit is split or detached.
- **Stranded Elements:** If all the Elements in a given Unit are not able to mount or dismount in a single turn, and the Unit is not split, the Elements that cannot mount or dismount are considered stranded. A transport Element with stranded Elements may not move and is treated as if it had 0 MP for to-hit purposes. Stranded Elements outside the transport may not move, but may attack normally. Stranded Elements may be attacked as if they had half their MP for to-hit purposes (round normally).



Paratroopers drop from a Karnov UR Transport into the teeth of a battle.



• MOUNTING AND DISMOUNTING DIAGRAM •

In the Mounting And Dismounting Diagram above, Kevin's Outpost *DropShip is grounded as shown on the Lake Area Map. It has the following transport abilities: AT4D2, MT5D1, VT10HD2, IT25D1 and CK13D1. In order, each ability means the* Outpost *can transport the following: up to 4 aerospace or conventional fighters with 2 doors, 5 'Mechs with 1 door, 10 heavy Vehicles (Elements up to 100 tons) with 2 doors, 25 tons' worth of infantry or battle armor with 1 door and 13,000 tons of cargo with 1 door.*

Kevin's 'Mech Star is embarking from Hex A. Though the Outpost *only has 1 'Mech door, up to 6 Elements may embark, so the entire Star enters from Hex A.*

At the same time, Kevin is disembarking a combined-arms Star consisting of 4 Epona Pursuit Tanks, 1 Elemental battle armor Point and 4 Ares Medium Tanks. The Outpost *has 2 vehicle doors, so it will be able to disembark a total of 12 Elements in one turn. All of the disembarking Elements must disembark to the same hex. This rules out Hexes A, B, C and D. Hex A is not permitted, as disembarking there would violate the stacking rule (see p. 219). Hexes B and C are prohibited terrain for the Ares Medium Tanks and Elementals. Hex D is prohibited terrain for the Epona Medium Tanks. Kevin selects Hex E for disembarkation.*

Finally, Kevin decides to disembark one of his two aerospace Units—a pair of Batu-Prime *aerospace fighters—to Hex F. Thanks to its 2 aerospace doors, the* Outpost *can disembark 12 aerospace Elements per turn. As a ground Element, the* Batus *have 4 MP available. It costs the* Batus *2 MP to disembark to Hex F: 1 MP to disembark and 1 MP to enter the hex. The* Batus *cannot lift off, as they expended ground MP, but they can continue moving normally. Kevin decides to move them to Hex G and turn them to face Hex H, as this will provide them with a 7-hex runway with which they can lift off next turn.*

Elements as Cargo

Many of the larger civilian DropShips have thousands of tons of cargo space available. While designed for consumer goods, this space may be converted to carry Elements as cargo. Each Element transported in this fashion takes 110 percent of its weight in cargo space. The extra weight represents extra materials used to protect the Element during transport. To be transported, an Element's weight must not exceed the capacity of the cargo bay.

Elements transported in this fashion are not combat ready and may not embark or disembark, or launch or recover. Instead, they must be unloaded as regular cargo. As cargo bay doors are not designed with military machines in mind, only one Element (regardless of size) may be loaded or unloaded per turn. Elements unloaded in this fashion are combat ready after 30 turns.

SQUADRONS (OPTIONAL)

These rules cover creating and using aerospace fighter and DropShip squadrons (Small Craft use the same rules as DropShips). If the scenario includes at least 1 WarShip, aerospace fighter squadrons are mandatory. If the scenario includes WarShips and more than 12 DropShips per side, DropShip squadrons are mandatory. Squadrons may not make air-to-ground attacks of any type. Squadrons are created prior to the beginning of play and remain in squadron format for the duration of the game. Squadrons cannot overheat.

CREATING SQUADRONS

Creating an aerospace fighter or DropShip squadron takes several steps described below.

Determine Squadron Organization

Refer to the table below.

Choose Elements

Select the appropriate number of Elements for the squadron.

Determine TP for the Squadron

The squadron (like any combined-arms Unit) will have a TP equal to that of its lowest individual TP rating.

Total Base Damage for Each Range

Add up the maximum damage for each range bracket: short, medium, long and extreme. The total is the base damage for the range. If the squadron has multiple different attacks, add up the base damage for each type of attack. In the case of a mixed squadron of spheroid and aerodyne DropShips, this will result in different attacks for the side and wing arcs.

Calculate Final Damage for Each Range

Divide the base damage by the number of Elements in the squadron and round normally. This is the incremental damage for the squadron. Multiply the incremental damage by the number of Elements that hit in an attack to determine the damage for the attack. For convenience, the squadron record sheet has entries to record this damage so that calculations may be made ahead of time.

AEROSPACE FIGHTER SQUADRONS

Inner Sphere Forces	
Squadron	3 Lances (6)

Clan Forces	
1/2 Star	5 Elements

ComStar/WoB Forces	
Squadron	3 Level IIs (6)

DROPSHIP SQUADRONS

Inner Sphere Forces	
Squadron	4 DropShips

Clan Forces	
Star	5 DropShip

ComStar/WoB Forces	
Level II	6 DropShips

Record Weight/Size Class

Fighter squadrons are always Size Class 1 (Small). DropShip Squadrons are always Size Class 3 (Large).

Calculate Point Value

The Point Value of a squadron is equal to the sum of the Point Values of all its individual fighters (or DropShips).

External Ordinance

Squadrons may use external ordinance, however every member of the squadron must carry the same ordinance.

Fill Out Squadron Statistics

Record the squadron's statistics on the Squadron Record Sheet.

DFC-0A DEFIANCE

TP	Damage S/M/L/E	Overheat	Weight Class	Armor-T/ Structure	Point Value	Specials
6a	4/4/2/—	—	2	8-1/3	15	BOMB2, SPC

F-92 STINGRAY

TP	Damage S/M/L/E	Overheat	Weight Class	Armor-T/ Structure	Point Value	Specials
6a	4/4/3/—	—	3	6-1/3	14	BOMB3, SPC

CMT-3T TROIKA

TP	Damage S/M/L/E	Overheat	Weight Class	Armor-T/ Structure	Point Value	Specials
6a	3/4/3/—	1	3	7-1/3	16	BOMB3, SPC

Aaron is going to build a squadron of Capellan fighters. He selects 2 each of the following: DFC-0A Defiance, *F-92* Stingray *and CMT-3T* Troika. *The stats for each fighter are listed below.*

Aaron sees that all the fighters he's chosen have a TP of 6a, which gives the squadron a TP of 6a. Had any of the fighters had a lower TP, the squadron would use that as its TP.

To determine the base damage for each range, Aaron adds the damage each fighter does at each range. For short range, it's 4 + 4 + 4 + 4 + 3 + 3 = 22. For medium range, it's 4 + 4 + 4 + 4 + 4 + 4 = 24. Finally, for long range it's 2 + 2 + 3 + 3 + 3 + 3 = 16. To determine the incremental damage for each range, Aaron divides the base damage by 6 and rounds normally. For short range, it's 22 ÷ 6 = 3.67, which rounds up to 4. For medium range, it's 24 ÷ 6 = 4. Finally, for long range it's 16 ÷ 6 = 2.67, which rounds up to 3.

Operating as a squadron, the fighters lose their Bomb special ability. Additionally, the Troikas *lose their ability to overheat. Aaron notes this on scrap paper. Next, he adds up the Point Values of all fighters to determine the Point Value of the squadron: 15 + 15 + 14 + 14 + 16 + 16 = 90.*

Finally, Aaron decides to call this squadron Celestial Avengers 1. The squadron's final stats are:

CELESTIAL AVENGERS 1

Fighter Squadron	TP	Armor-T/ Structure	Specials	Damage by # Successful S/M/L/E
Defiance	6a	8-1/3	BOMB2, SPC	4/4/3/—
Defiance	6a	8-1/3	BOMB2, SPC	8/8/6/—
Stingray	6a	6-1/3	BOMB3, SPC	12/12/9/—
Stingray	6a	6-1/3	BOMB3, SPC	16/16/12/—
Troika	6a	7-1/3	BOMB3, SPC	20/20/15/—
Troika	6a	7-1/3	BOMB3, SPC	24/24/18/—



Bashkir Prime, *Alpha Galaxy (Clan Snow Raven)*

Alice is going to build an advanced squadron of Marik DropShips. She selects the following: Hamilcar, Hannibal *and* Intruder *(upgraded version), and* Merlin. *The stats for each are listed below.*

HAMILCAR

TP	Damage S/M/L/E	Overheat	Size Class	Armor-T/ Structure	Point Value	Specials
4a	Nose: 3/4/4/0 Wings: 4/4/3/0 Aft: 3/5/4/0	—	2	20-2/5	38	AT4D2, CT64D2, MT8D1, SPC

HANNIBAL

TP	Damage S/M/L/E	Overheat	Size Class	Armor-T/ Structure	Point Value	Specials
5a	Nose: 6/7/5/0 Wings: 5/6/3/0 Aft: 7/8/2/0	—	2	24-3/6	52	CT917.5D1, IT20, SPC, VTH12D2

INTRUDER (UPGRADED)

TP	Damage S/M/L/E	Overheat	Size Class	Armor-T/ Structure	Point Value	Specials
4p	Nose: 7/8/5/0 Sides: 5/6/3/0 Aft: 7/7/6/0	—	2	135-14/11	65	AT2D1, CT802D1, IT15, SPC

MERLIN

TP	Damage S/M/L/E	Overheat	Size Class	Armor-T/ Structure	Point Value	Specials
6p	Nose: 12/14/8/0 Sides: 2/2/0/0 Aft: 3/3/3/0	—	2	123-13/10	52	AT2D2, CT717D3, SPC

First, Alice determines that she has the correct number of DropShips for her squadron. Consulting the table, she sees that 4 DropShips are correct for an Inner Sphere squadron. Next, she finds the lowest TP in the squadron. The Hamilcar *with 4a and the* Intruder *with 4p are tied. As the squadron will only operate in space, the distinction between movement types is moot. Alice records her squadron's TP as 4.*

Now, Alice calculates the base damage for each arc and range. All four DropShips have Nose attacks, so her totals for the Nose arc are: 28/33/22/0. For the sides, only two DropShips have these attacks, so her totals are 7/8/3/0. For the wings, again for only 2 DropShips, it's 9/10/6/0. Finally, for the Aft arc (all four ships again) it's 20/23/15/0.

Alice now needs to calculate her squadron's incremental damage. To do this, she divides the totals at each range by 4 (the number of DropShips in her squadron). She rounds each total normally, getting Nose: 7/8/6/0, Wings: 2/3/2/0, Sides: 2/2/1/0 and Aft: 5/6/4/0. Alice will multiply these numbers by the number of DropShips that hit to determine the damage her squadron can do in combat.

Alice's Squadron stats are as follows:

DropShip Squadron	TP	Armor-T/ Structure	Specials
Hamilcar	4a	20-2/5	AT4D2, CT64D2, MT8D1, SPC
Hannibal	4a	24-3/6	CT917.5D1, IT20, SPC, VTH12D2
Intruder (U)	4p	135-14/11	AT2D1, CT802D1, IT15, SPC
Merlin	6p	123-13/210	AT2D2, CT717D3, SPC

Damage by Arc and Number Successful

	Nose	Wings	Side	Aft
1	7/8/6/0	2/3/2/0	2/2/1/0	5/6/4/0
2	14/16/12/0	4/6/4/0	4/4/2/0	10/12/8/0
3	21/24/18/0	6/9/6/0	6/6/3/0	15/18/12/0
4	28/32/24/0	8/12/8/0	8/8/4/0	20/24/16/0

FORCE GENERATION

The following rules provide additional options for Force generation.

BUILDING UNITS (OPTIONAL)

The method presented in *BattleForce: Standard Rules* assumes that each player will work from a set Point Value to create his or her Force. An additional level of detail may be added to the process by using the Aggregate Weight by Force rules (below). Alternatively, players may purchase their Forces with C-bills, tonnage or any other Unit of measure agreeable to all players.

Instead of the Point Value system, players may also use the True Random system. Using the Random Allocation Tables in *Total Warfare*, or other suitable *BattleTech* resources, players may randomly generate their Forces (see *Random Force Generation*, below).

Buying Units (Optional)

When using C-bills to purchase a Force, improved Skill Ratings are acquired by spending extra C-bills on the Element. Multiply the cost of the Element by the Skill Rating modifier and round normally to determine the cost of the Element.

RANDOM FORCE GENERATION (OPTIONAL)

Randomly creating a Force significantly changes the dynamics of a *BattleForce* game. While a purchased Force can be tailored to a player's fighting style, a random Force requires that a player demonstrate her skill by playing the hand she's dealt, rather than stacking the deck in her favor. The former is arguably a more difficult task.

Generating a Force in this manner requires a significant number of dice rolls. Players may consider any or all of these rules optional, making decisions at some steps and random rolls at others. There are a total of 9 steps:

- Determine Military Organization
- Determine Force Size and Formation
- Determine Force Rating
- Determine Force Weight Class

- Determine Force Composition
- Determine Force Experience
- Determine Company Composition
- Determine Lance Composition
- Roll on Random Allocation Tables for Elements
- Generate and Assign Pilots

DETERMINE MILITARY ORGANIZATION

To determine the military organization for a Force, roll 1D6 and consult the Military Organization Table.

MILITARY ORGANIZATION TABLE

1D6 Roll	Weight Class
1-2	Inner Sphere/Periphery
3-4	Clan
5-6	ComStar/Word of Blake

Desiree is randomly generating a Force. To determine her military organization, she rolls 1D6. Her result of 4 indicates that she will build a Clan Force.

DETERMINE FORCE SIZE AND FORMATION

To determine Force size, roll 2D6 and consult the appropriate column of the Force Size Table. If the roll indicates an advanced Formation, roll again to determine the base advanced Formation. Ignore any subsequent rolls indicating an advanced Formation.

Advanced Formations

To determine the composition of an advanced Formation, roll 2D6 and refer to the appropriate column of the Advanced Formations Table. For the composition of advanced Formations, refer to *Advanced Military Organization* (see p. 300). For ComStar/Word of Blake Forces, roll 1D6. On a 1-3, roll on the Level III column; on a 4-6, roll on the Level IV column.

Desiree rolls 2D6 to determine the size and Formation of her Clan Force. With a result of 3, Desiree sees that she will have to roll on the Advanced Formations Table. First, however, she rolls 2D6 to determine what column of the Advanced Formations Table she will roll on. She gets a 7, indicating that she will roll on the Cluster column of the Advanced Formations Table. Desiree next rolls a 5, indicating an under-strength Cluster. Referring to the Advanced Military Organization section on page 300, Desiree sees that an under-strength Cluster is a Formation consisting of 2 Binaries, Trinaries or Supernovas with a total number of Elements between 20 and 40.

DETERMINE FORCE RATING

Elements are ranked according to the technology they employ. Inner Sphere Forces (including ComStar/Word of Blake) are rated A-F, with A being the highest rating. Clan Forces are rated as Front Line (F), Second Line (S), or Solahma (So) Elements. A Clan Solahma Force is roughly analogous to an Inner Sphere C-rated Force.

MILITARY ORGANIZATION TABLE

2D6 Roll	Inner Sphere	Clan	ComStar/WoB
2	Advanced	Advanced	Advanced
3	Advanced	Advanced	Advanced
4	Company	Trinary	2 Level IIs
5	Regiment	Galaxy	4 Level IIIs
6	Battalion	Cluster	Level III
7	Battalion	Cluster	Level III
8	Battalion	Cluster	Level III
9	Regiment	Galaxy	4 Level IIIs
10	Company	Trinary	2 Level IIs
11	Advanced	Advanced	Advanced
12	Advanced	Advanced	Advanced

To randomly generate a technology rating for a Force, roll 2D6 and consult the Force Rating Table. The Rating column lists the alphabetic rating for the Force, and the technology column describes the corresponding technology for Inner Sphere Forces. This rating will be used to determine what Random Allocation Tables may be used to generate a Force.

Desiree rolls 2D6, getting a 12. Consulting the Force Rating Table, she sees that she'll be creating a Front Line Force that will have access to all the latest and greatest battlefield technology. She flashes a mischievous grin at her opponent.

DETERMINE FORCE WEIGHT CLASS

Players have two methods to determine the weight class of a Force when using random generation: true random and target weight class. When using the True Random method, roll 2D6 and consult the Force Weight Class Table. When using the Target Weight Class method, select the desired weight class from the table.

Desiree wants to build her under-strength Cluster with a random weight class. She rolls 2D6 and gets an 8, indicating that her Force will have a medium weight class.

DETERMINE FORCE COMPOSITION

Once the weight class of the Force is determined, the weight classes of its company-equivalent Formations must be determined. Roll on the appropriate portion of the Force Composition Table to determine the composition of battalion-equivalent Formations. Players create larger Formations by making multiple rolls on this table until the correct number of Formations has been generated.

Desiree is generating a Front Line, medium, under-strength Cluster. Finding the Under-Strength Cluster row of the Force Composition Table, she rolls 1D6, getting a 3. Her Force will consist of 2 medium Formations. These Formations could be Trinaries, Binaries or Supernovas. She

ADVANCED FORMATIONS TABLE*

2D6 Rolls	Company	Battalion	Regiment	Trinary	Cluster	Galaxy	Level III	Level IV
2	Company	Battalion	Regiment	Trinary	Cluster	Galaxy	Level III	Level IV
3	Company	Battalion	Ref Regiment	Binary	Ref Cluster	Ref Galaxy	Level III	Level IV
4	Us Company	Us Battalion	Ref Regiment	Binary	Ref Cluster	Ref Galaxy	Us Level III	Us Level IV
5	Us Company	Us Battalion	Us Regiment	Nova	Us Cluster	Us Galaxy	Us Level III	Us Level IV
6	Us Company	Us Battalion	Us Regiment	Nova	Us Cluster	Us Galaxy	Us Level III	Us Level IV
7	Company	Battalion	Regiment	Trinary	Cluster	Galaxy	Level III	Level IV
8	Ref Company	Ref Battalion	Str Regiment	Supernova	Str Cluster	Str Galaxy	Ref Level III	Ref Level IV
9	Ref Company	Ref Battalion	Str Regiment	Supernova	Str Cluster	Str Galaxy	Ref Level III	Ref Level IV
10	Ref Company	Ref Battalion	Ref Regiment	Supernova	Str Cluster	Str Galaxy	Ref Level III	Ref Level IV
11	Company	Battalion	Regiment	Trinary	Cluster	Galaxy	Level III	Level IV
12	Company	Battalion	Ref Regiment	Binary	Ref Cluster	Ref Galaxy	Level III	Level IV

*Abbreviations: Ref = Reinforced, Str = Strong, Us = Under-strength.

will determine that at the next step. If Desiree were generating a larger Force, she would make additional rolls on the Force Composition Table until she had generated all of her company-equivalent Formations.

DETERMINE FORCE EXPERIENCE

The experience level of a Force may be generated randomly or selected according to a list. The first step for each method (unless a specific experience level is desired) is to roll on the Random Skill Rating Table (see p. 320) to determine the Skill Rating of the Force (apply all modifiers as normal).

Next, players may continue using the Random Skill Rating Table to generate Skill Ratings for each Element in the Force, or they may use the Aggregate Experience by Company Table to obtain a pool of pilots with predetermined skills.

Aggregate Experience by Force (Optional)

This option dictates the number of pilots/warriors at each experience rating based on the Force's overall experience rating. The Aggregate Experience by Force Table shows at each Skill Rating: the percentage of Elements / the number of Elements per company or 2 Level IIs / the number of Elements per Trinary.

Percentages are given for use with non-standard Formations. To determine the number of Elements at a given Skill Rating, multiply the number of Elements in the Formation by the indicated percentage and round normally. If, after determining the numbers of Elements at each Skill Rating, rounding produces too many or too few Elements, alternate eliminating Elements from the lowest and highest Skill Ratings in the Force until the correct number is reached.

The table allows the creation of experience ratings that are rarely seen in the *BattleTech* universe. To adjust the skills so that they are more in line with a normal Force, add the percentages of pilots for Wet Behind the Ears and Really Green to the Green column, and the percentages of Heroic and Legendary to the Elite column.

Desiree flips to page 320. She sees that her Front Line Force can get a +1 modifier on the Random Experience portion of

FORCE RATING TABLE

2D6 Roll	Inner Sphere*/ Clan Rating	Inner Sphere Technology Era
2	F/So	3025
3	F/So	3025
4	D/S	3025
5	D/S	3050 & Star League
6	D/S	3050 & Star League
7	C/S	3058
8	C/S	3058
9	C/S	3058
10	B/F	3067
11	B/F	3067
12	A/F	3073+

*Includes ComStar/Word of Blake and Periphery

FORCE WEIGHT CLASS TABLE

2D6 Roll	Weight Class
2	Light
3	Medium
4	Heavy
5	Light
6	Medium
7	Medium
8	Medium
9	Light
10	Assault
11	Medium
12	Light

FORCE COMPOSITION TABLE

INNER SPHERE/PERIPHERY

Under-Strength Battalion				
1D6 Roll	**Light Composition**	**Medium Composition**	**Heavy Composition**	**Assault Composition**
1-2	2 Light Companies	1 Light Company & 1 Medium Company	1 Medium Company & 1 Heavy Company	1 Heavy Company & 1 Assault Company
3-4	2 Light Companies	2 Medium Companies	2 Heavy Companies	2 Heavy Companies
5-6	1 Light Company & 1 Medium Company	1 Medium Company & 1 Heavy Company	1 Heavy Company & 1 Assault Company	2 Assault Companies

Standard Battalion				
1D6 Roll	**Light Composition**	**Medium Composition**	**Heavy Composition**	**Assault Composition**
1-2	3 Light Companies	1 Light Company & 2 Medium Companies	2 Medium Companies & 1 Heavy Company	2 Heavy Companies & 1 Assault Company
3-4	2 Light Companies & 1 Medium Company	3 Medium Companies	3 Heavy Companies	1 Heavy Company & 2 Assault Companies
5-6	1 Light Company & 2 Medium Companies	2 Medium Companies & 1 Heavy Company	2 Heavy Companies & 1 Assault Company	3 Assault Companies

Reinforced Battalion				
1D6 Roll	**Light Composition**	**Medium Composition**	**Heavy Composition**	**Assault Composition**
1-2	4 Light Companies	2 Light Companies & 2 Medium Companies	2 Medium Companies & 2 Heavy Companies	2 Heavy Companies & 2 Assault Companies
3-4	3 Light Companies & 1 Medium Company	4 Medium Companies	4 Heavy Companies	1 Heavy Company & 3 Assault Companies
5-6	2 Light Companies & 2 Medium Companies	2 Medium Companies & 2 Heavy Companies	2 Heavy Companies & 2 Assault Companies	4 Assault Companies

CLAN

Under-Strength Cluster				
1D6 Roll	**Light Composition**	**Medium Composition**	**Heavy Composition**	**Assault Composition**
1-2	2 Light Trinaries*	1 Light Trinary* & 1 Medium Trinary*	1 Medium Trinary* & 1 Heavy Trinary*	1 Heavy Trinary* & 1 Assault Trinary*
3-4	2 Light Trinaries*	2 Medium Trinaries*	2 Heavy Trinaries*	2 Heavy Trinaries*
5-6	1 Light Trinary* & 1 Medium Trinary*	1 Medium Trinary* & 1 Heavy Trinary*	1 Heavy Trinary* & 1 Assault Trinary*	2 Assault Trinaries*

Standard Cluster				
1D6 Roll	**Light Composition**	**Medium Composition**	**Heavy Composition**	**Assault Composition**
1-2	3 Light Trinaries*	1 Light Trinary* & 2 Medium Trinaries*	2 Medium Trinaries* & 1 Heavy Trinary*	2 Heavy Trinaries* & 1 Assault Trinary*
3-4	2 Light Trinaries* & 1 Medium Trinary*	3 Medium Trinaries*	3 Heavy Trinaries*	1 Heavy Trinary* & 2 Assault Trinaries*
5-6	1 Light Trinary* & 2 Medium Trinaries*	2 Medium Trinaries* & 1 Heavy Trinary*	2 Heavy Trinaries* & 1 Assault Trinary*	3 Assault Trinaries*

*Trinary, Binary or Supernova (determined in the next step)

FORCE COMPOSITION TABLE, CONTINUED

CLAN

Reinforced Cluster				
1D6 Roll	Light Composition	Medium Composition	Heavy Composition	Assault Composition
1-2	4 Light Trinaries*	2 Light Trinaries* & 2 Medium Trinaries*	2 Medium Trinaries* & 2 Heavy Trinaries*	2 Heavy Trinaries* & 2 Assault Trinaries*
3-4	3 Light Trinaries* & 1 Medium Trinary*	4 Medium Trinaries*	4 Heavy Trinaries*	1 Heavy Trinary* & 3 Assault Trinaries*
5-6	2 Light Trinaries* & 2 Medium Trinaries*	2 Medium Trinaries* & 2 Heavy Trinaries*	2 Heavy Trinaries* & 2 Assault Trinaries*	4 Assault Trinaries*

Strong Cluster				
1D6 Roll	Light Composition	Medium Composition	Heavy Composition	Assault Composition
1-2	5 Light Trinaries*	3 Light Trinaries* & 2 Medium Trinaries*	3 Medium Trinaries* & 2 Heavy Trinaries*	3 Heavy Trinaries* & 2 Assault Trinaries*
3-4	4 Light Trinaries* & 1 Medium Trinary*	5 Medium Trinaries*	5 Heavy Trinaries*	2 Heavy Trinary* & 3 Assault Trinaries*
5-6	3 Light Trinaries* & 2 Medium Trinaries*	3 Medium Trinaries* & 2 Heavy Trinaries*	3 Heavy Trinaries* & 2 Assault Trinaries*	5 Assault Trinaries*

*Trinary, Binary or Supernova (determined in the next step)

COMSTAR/WORD OF BLAKE

Under-Strength Level III				
1D6 Roll	Light Composition	Medium Composition	Heavy Composition	Assault Composition
1-2	5 Light Level IIs	3 Light Level IIs & 2 Medium Level IIs	4 Medium Level IIs & 1 Heavy Level II	4 Heavy Level IIs & 1 Assault Level II
3-4	4 Light Level IIs & 1 Medium Level II	5 Medium Level IIs	5 Heavy Level IIs	2 Heavy Level IIs & 3 Assault Level IIs
5-6	3 Light Level IIs & 2 Medium Level IIs	4 Medium Level IIs & 1 Heavy Level II	4 Heavy Level IIs & 1 Assault Level II	5 Assault Level IIs

Standard Level III				
1D6 Roll	Light Composition	Medium Composition	Heavy Composition	Assault Composition
1-2	6 Light Level IIs	3 Light Level IIs & 3 Medium Level IIs	4 Medium Level IIs & 2 Heavy Level IIs	4 Heavy Level IIs & 2 Assault Level IIs
3-4	4 Light Level IIs & 2 Medium Level IIs	6 Medium Level IIs	6 Heavy Level IIs	2 Heavy Level IIs & 4 Assault Level IIs
5-6	3 Light Level IIs & 3 Medium Level IIs	4 Medium Level IIs & 2 Heavy Level IIs	4 Heavy Level IIs & 2 Assault Level IIs	6 Assault Level IIs

Reinforced Level III				
1D6 Roll	Light Composition	Medium Composition	Heavy Composition	Assault Composition
1-2	7 Light Level IIs	4 Light Level IIs & 3 Medium Level IIs	5 Medium Level IIs & 2 Heavy Level IIs	5 Heavy Level IIs & 2 Assault Level IIs
3-4	5 Light Level IIs & 2 Medium Level IIs	7 Medium Level IIs	7 Heavy Level IIs	3 Heavy Level IIs & 4 Assault Level IIs
5-6	4 Light Level IIs & 3 Medium Level IIs	5 Medium Level IIs & 2 Heavy Level IIs	5 Heavy Level IIs & 2 Assault Level IIs	7 Assault Level IIs

AGGREGATE EXPERIENCE BY FORCE TABLE

Force Experience	Pilots							
	WB*	Really Green	Green	Regular	Veteran	Elite	Heroic	Legendary
WB*	15/2/2	25/3/4	30/4/5	20/2/3	10/1/2	0/0/0	0/0/0	0/0/0
Really Green	15/2/2	20/2/3	25/3/4	25/3/4	10/1/2	5/1/1	0/0/0	0/0/0
Green	5/1/1	15/2/2	25/3/4	25/3/4	20/2/3	10/1/2	0/0/0	0/0/0
Regular	0/0/0	10/1/2	20/2/3	30/4/5	20/2/3	10/1/2	5/1/1	5/1/1
Veteran	0/0/0	0/0/0	0/0/0	25/3/4	40/5/6	15/2/2	10/1/2	10/1/2
Elite	0/0/0	0/0/0	0/0/0	15/2/2	40/5/6	20/2/3	15/2/2	10/1/2
Heroic	0/0/0	0/0/0	0/0/0	5/1/1	20/2/3	35/4/5	25/3/4	15/2/2
Legendary	0/0/0	0/0/0	0/0/0	5/1/1	10/1/2	35/4/5	30/4/5	20/2/3

*Wet Behind the Ears

the Random Skill Rating Table if she uses the Random with Target Experience method, but she opts for an unmodified roll. Her 2D6 roll results in a 6, indicating Regular experience. She could roll randomly for all her pilots, but instead she opts for the Aggregate Experience method. Consulting the Regular row of the table, she sees that 10 percent of her Force will be Really Green, 20 percent will be Green, 30 percent Regular, 20 percent Veteran, 10 percent Elite, 5 percent Heroic and 5 percent Legendary.

Looking at those numbers, Desiree decides she'd rather generate a more realistic Force. She adds the 10 percent from Really Green to the Green column, and the 5 percent from Heroic and Legendary to the Elite column. Her final percentages are: Green 30 percent, Regular 30 percent, Veteran 20 percent and Elite 20 percent.

DETERMINE COMPANY COMPOSITION

The rules for generating a company vary slightly depending on the method and faction chosen. Players creating a Clan Formation must roll to determine if their Formation will be a Binary, Trinary or Supernova. Roll 1D6. On a 1-3, the Force is a Binary, on a 4-6 it's a Trinary. Roll 2D6 for each Binary and Trinary. On a result of 12, the Binary or Trinary becomes a Supernova (a Binary or Trinary reinforced with 2 Stars of battle armor).

For standard organizations, players have two choices: the True Random method or the Random with a Target Weight Class method.

True Random

Roll 1D6 for each company and consult the Company Lance Weight Classes Table (below) to find the number and type of lances for each company.

Random With a Target Weight Class

Refer to the Aggregate Weight by Force Table, below. The table lists the number of Elements at each weight class for a company-equivalent Formation. Refer to Lance Composition for addressing non-standard Formations with the Aggregate Weight by Force Table.

Aggregate Weight by Force (Optional): This option dictates the number of Elements at each weight class based on the overall weight class of the Force. The Aggregate Weight Class by Force Table shows the percentage of Elements / the number of Elements per company or 2 Level IIs / the number of Elements per Trinary at each weight class.

Percentages are given for use with non-standard Formations. To determine the number of Elements in a given weight class, multiply the number of Elements in the Formation by the indicated percentage and round normally. If, after determining the numbers of Elements at each weight class, rounding produces too many or too few Elements, adjust the lowest weight class in the Force until the correct number is achieved.

Using this option precludes randomly generating lance composition.

Desiree continues with the True Random method. First, she rolls 1D6 for each Formation, getting a 3 and a 4. This will give her 1 Binary and 1 Trinary. She rolls 2D6 for each, but neither roll comes up a 12, so neither Formation will be a Supernova.

Now she needs to determine the weight of the Stars in each Formation. For her Binary, she rolls a 4. Consulting the Medium column of the Clan section of the Company Composition Table, she finds this will give her 1 Medium and 1 Heavy Star. For her Trinary, she rolls a 2. Looking in the Medium column again, she sees that roll gives her 1 Light and 2 Medium Stars.

DETERMINE LANCE COMPOSITION

The process for determining the weight class of Elements in a lance varies depending on the method employed and whether or not the lance follows standard organization. First, determine if the lance-equivalent Units in the Formation follow standard organization by rolling 1D6. On a result of 1-5, the lance-equivalent Units follow standard organization. On a 6, the Formation uses non-standard organization (see below). Roll once for each company-equivalent Formation.

Standard Organization

If the lance equivalent uses standard organization, roll 1D6 for each lance equivalent and consult the appropriate column of the corresponding faction on the Standard

COMPANY LANCE WEIGHT CLASSES TABLE

INNER SPHERE/PERIPHERY/CLAN TRINARY/TRINARY SUPERNOVA

1D6 Roll	Light Composition	Medium Composition	Heavy Composition	Assault Composition
1-2	3 Light	1 Light, 2 Medium	1 Medium, 2 Heavy	2 Heavy, 1 Assault
3-4	3 Light	3 Medium	3 Heavy	1 Heavy, 2 Assault
5-6	2 Light, 1 Medium	1 Light, 1 Medium, 1 Heavy	1 Medium, 1 Heavy, 1 Assault	3 Assault

CLAN BINARY/BINARY SUPERNOVA/COMSTAR/WORD OF BLAKE

1D6 Roll	Light Composition	Medium Composition	Heavy Composition	Assault Composition
1-3	2 Light	2 Medium	2 Heavy	1 Heavy, 1 Assault
4-6	1 Light, 1 Medium	1 Medium, 1 Heavy	1 Heavy, 1 Assault	2 Assault

Lance Organization Table to determine the weight classes of Elements in the lance-equivalent Unit.

Non-Standard Lance-Equivalent Organization

If the lance-equivalent Unit uses non-standard organization, players must roll 2D6 and consult the Non-Standard Lance Organization Table to determine the composition of the company-equivalent's lances. One roll is made and applied to every lance equivalent in the company.

Non-Standard Lance Weights

Determine the lance weight class as above, then roll on the Non-Standard Lance Weight Distribution Table (below) to determine specific composition. The format of the table is Number of Elements below Weight Class/Number of Elements at Weight Class/Number of Elements Above Weight Class. If the weight class is light, then the number of Elements below the weight class is added to the number of Elements at the weight class. If the weight class is Assault, then the number of Elements above the weight class is added to the number of Elements at the weight class.

Desiree rolls 1D6 to determine if her Binary follows standard Formation. She gets a 6, and has to roll on the Non-Standard Lance Organization Table. She rolls 2D6 and gets a 7, indicating an under-strength Star with 4 Elements. Both Stars in her Binary will only have 4 Elements. Next, she refers to the Non-Standard Lance Weight Distribution Table to determine the weight class of the Elements in her Binary. On her first roll she gets a 3. Reading across to the 4 Elements column, she sees that a 3 gives a result of 0/4/0. This means there are no Elements (0) below the medium weight class, 4 at medium and 0 Elements above it. The first Star in her Binary has 4 medium 'Mechs. Desiree rolls for her second Star and gets a 5. Checking the 4 Element column, she sees 0/3/1: 0 Elements below the heavy weight class, 3 at heavy and 1 Element above it. Her second Star will have 3 heavy 'Mechs and 1 assault 'Mech.

For her Trinary, Desiree rolls 1D6, getting a 2. The Trinary will follow standard organization, so she rolls 1D6 and gets a 1. Her light Star will have 5 light 'Mechs. She rolls 1D6 for her second Star, getting a 5: that nets her 3 light and 2 medium 'Mechs. Finally, for her medium Star she rolls a 4; this gets her 4 medium 'Mechs and 1 heavy 'Mech.

AGGREGATE WEIGHT BY FORCE TABLE (COMPANIES)

Force Weight	Company Weight			
	Light	Medium	Heavy	Assault
Light	40/5/6	35/4/5	25/3/4	0/0/0
Medium	35/4/5	40/5/6	25/3/4	0/0/0
Heavy	0/0/0	35/4/5	40/5/6	25/3/4
Assault	0/0/0	25/3/4	35/4/5	40/5/6

ROLL ON RANDOM ASSIGNMENT TABLES

The Random Assignment Tables (RATs) in *Total Warfare* and on pages 51-57 of this book—and other books—list appropriate Elements by faction and are delineated by Force Rating. Refer to the appropriate table and roll for Elements.

Desiree makes a number of rolls on the random allocation tables in Total Warfare *and generates her Binary and Trinary.*

Generate and Assign Pilots

To generate pilots, refer to the Random Skills Table (see p. 321) for the True Random method, or the Aggregate Experience by Force Table (see p. 333). If using the Aggregate Experience by Force Table with non-standard lances, use the percentages and round normally.

Desiree decided to use the Aggregate Experience by Force Table. Her final percentages were Green 30 percent, Regular 30 percent, Veteran 20 percent and Elite 20 percent. She has a total of 18 Elements in her Binary (2 under-strength 'Mech Stars and 2 Stars of battle armor). Her Trinary has 25 Elements (3 'Mech Stars and 2 battle armor Stars). Multiplying 18 by her percentages gives her the following Skill Ratings for her Binary: 5 Green, 5 Regular, 4 Veteran and 4 Elite. For her Trinary, she has the following Skill Ratings: 8 Green, 8 Regular, 5 Veteran and 5 Elite. Rounding has exceeded her total number of Elements, so she eliminates 1 of her Green Elements.

STANDARD LANCE ORGANIZATION TABLE

INNER SPHERE/PERIPHERY

1D6 Roll	Light Lance	Medium Lance	Heavy Lance	Assault Lance
1	4 Light	1 Light, 2 Medium, 1 Heavy	1 Medium, 3 Heavy	1 Medium, 1 Heavy, 2 Assault
2-3	3 Light, 1 Medium	4 Medium	4 Heavy	2 Heavy, 2 Assault
4-5	2 Light, 2 Medium	3 Medium, 1 Heavy	1 Medium, 2 Heavy, 1 Assault	1 Heavy, 3 Assault
6	2 Light, 1 Medium, 1 Heavy	2 Medium, 2 Heavy	3 Heavy, 1 Assault	4 Assault

CLANS

1D6 Roll	Light Star	Medium Star	Heavy Star	Assault Star
1	5 Light	1 Light, 4 Medium	2 Medium, 3 Heavy	1 Medium, 2 Heavy, 2 Assault
2-3	4 Light, 1 Medium	5 Medium	1 Medium, 4 Heavy	4 Heavy, 1 Assault
4-5	3 Light, 2 Medium	4 Medium, 1 Heavy	5 Heavy	3 Heavy, 2 Assault
6	2 Light, 2 Medium, 1 Heavy	3 Medium, 2 Heavy	1 Medium, 3 Heavy, 1 Assault	2 Heavy, 3 Assault

COMSTAR/WORD OF BLAKE

1D6 Roll	Light Level II	Medium Level II	Heavy Level II	Assault Level II
1	6 Light	1 Light, 4 Medium, 1 Heavy	2 Medium, 4 Heavy	1 Medium, 3 Heavy, 2 Assault
2-3	4 Light, 2 Medium	1 Light, 3 Medium, 2 Heavy	1 Medium, 5 Heavy	4 Heavy, 2 Assault
4-5	3 Light, 3 Medium	4 Medium, 2 Heavy	5 Heavy, 1 Assault	3 Heavy, 3 Assault
6	2 Light, 2 Medium, 2 Heavy	3 Medium, 3 Heavy	4 Heavy, 2 Assault	2 Heavy, 4 Assault

NON-STANDARD LANCE ORGANIZATION TABLE

Inner Sphere Forces	
2D6 Roll	Elements
2-4 Short Lance	2
5-6 Under-Strength Lance	3
7-8 Regular Lance	4
9-10 Reinforced Lance	5
11-12 Fortified Lance	6

Clan Forces	
2D6 Roll	Elements
2-3 Half Star	2
4-5 Short Star	3
6-7 Under-Strength Star	4
8-9 Regular Star	5
10-11 Reinforced Star	6
12 Fortified Star	7

ComStar/Word of Blake Forces	
2D6 Roll	Elements
2 Thin Level II	2
3 Half Level II	3
4 Short Level II	4
5-6 Under-Strength Level II	5
7-8 Regular Level II	6
9-10 Reinforced Level II	7
11 Fortified Level II	8
12 Heavy Level II	9

NON-STANDARD LANCE WEIGHT DISTRIBUTION TABLE

1D6 Roll	2 Elements	3 Elements	4 Elements	5 Elements	6 Elements	7 Elements	8 Elements	9 Elements
1	1/1/0	1/2/0	1/3/0	1/4/0	2/4/0	2/5/0	3/5/0	4/5/0
2-3	0/2/0	0/3/0	0/4/0	0/5/0	0/6/0	0/7/0	0/8/0	0/9/0
4-5	0/1/1	0/2/1	0/3/1	0/4/1	0/5/1	1/4/2	2/4/2	1/6/2
6	0/1/1	1/1/1	1/2/1	1/3/1	1/4/1	1/4/2	1/5/2	1/6/2

Lecture Hall Fox Green
New Avalon Military Academy (NAMA)
Avalon City, New Avalon
Crucis March, Federated Suns
16 June 3072

Major Laurie Ann Williams, MIIO, NAMA Cadre, was in a rush and she hated to be rushed. The click of her spurs on the floor echoed up and down the virtually empty halls. Only a few of the cadets and cadre remained now, mostly to finish up briefings and demobilize the equipment that could be moved to safer locations. Time was short.

Today was one of the last days that the academy had left. Intelligence reports placed the Blakist forces within two days' fighting distance of NAMA, and there was less of the AFFS on-world every day to keep them at bay. This school had long been a source of pride for the people and military of the Federated Suns, even more so with the rise of Hanse Davion.

This was the Fox's House and now it must be sacrificed for the people of New Avalon.

Stopping at the classroom, she straightened her dress uniform as the senior cadet called them to attention. On time to the second, with purpose and drive, she pushed past the few students assembled for her class and stepped up to the central podium. She looked out at the small group and turned on the primary holoprojector to update them on the latest situations happening around them in real time. Taking out her glasses, she put them on so she could focus on the students' faces. Once she had sat there, once she had been where they were. Now all she could think of was their fate. So young, so likely to die.

"Good morning, cadets."

"GOOD MORNING MA'AM!" thundered their response. The echo in the auditorium did them justice. So much fire and drive. With that, they might survive.

"Take your seats. I hope you all reviewed the material for today, as no notes or exams will be required. This is a refresher course, you should be very familiar with this material now; it will be of great importance for those of you who may live long enough to see Christmas." She said it without emotion, looking at each cadet in turn. The students sat as she punched up the day's lecture—*Warfare Symbology Today (3072).* The cadets quickly downloaded the notes to their datapads so they could follow along.

WARFARE SYMBOLOGY

To recap and make sure we are all up to speed…You are of course aware that throughout recorded history, the leaders of soldiers have attempted to use symbols to represent the size and relationships of forces they have and forces they face. From the earliest times, humans used available objects as simple as rocks and sticks to represent troops and their movement on crude maps. Easily done and not hard to set up anywhere, these methods also were not truly accurate or especially useful.

Over time, simple models and gaming tables began to evolve into a more universal system for modern military forces. Computer systems of the 20th and 21st centuries combined with primitive holographic technology to supplant map transparencies and overlays, 2D computer graphics and dry erase boards; but even then, standardization for forces deployed was a must.

The first level, the echelon, or relationship of each unit of command, still requires depiction. Commanders on pre-colonization Terra still depended on the standard symbology that had come from the NATO (North Atlantic Treaty Organization) and Warsaw Pact nations and later the Western Alliance.

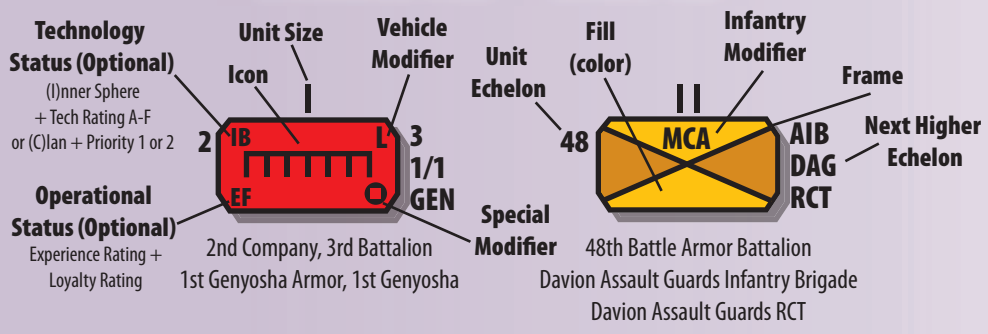
But then, what is military symbology? A picture is said to be worth a thousand words, if this is taken as truth, then symbology is the real-time image of what that picture means to a commander, be it on a civil or military basis. In today's fast-paced battlefield, symbology is a universally applied way of presenting operational information between leaders and the led without misinterpretation or misunderstanding in real time. The data compiled and symbolized serves as a graphic representation of units present in order to define an operational plan or order of battle of forces involved. The text presented here follows simple rules for the construction and application of today's common military symbols.

After the coming of the Clans in the early 3050s and the mercenary expansion that followed, changes to the traditional Star League Defense Force methodology became necessary. Along with the Clans, ComStar and the Word of Blake's "base six" organization further pushed the need for clarifications to account for these new types of units. In use for more than eleven centuries, the warfare symbology common then had changed little throughout that time, until now. More changes have since been prompted by advances in civil and military technology and their effects on life as a whole. Presented here for your edification is the Standard SLDF Warfare Symbology system, in brief, as presented and approved by the First Whitting Conference.

The starting point for any symbol is the frame; please pull up Diagram One on your datapads. You should be looking at the Second Company, Third Battalion of the First Genyosha as well as the Forty-eighth Battle Armor Battalion of the Davion Assault Guards.

A unit is represented by this frame, which is a rectangle, usually with a color fill based on the House or organization that backs the unit in question. For example, for the Second Company, Third

• DIAGRAM ONE — EXAMPLES •



• DIAGRAM TWO — FORMATION SIZE SYMBOL AND EQUIVALENCY TABLE •

Standard Ground Formation Size (Aerospace Formation Size)	Symbol	ComStar/WoB Formation Size	Symbol	Clans Formation Size	Symbol
Installation	▬				
Fire Team	⌀				
Individual Unit/Squad	●	Level I	□	Point	▲
Team/Section (Element)	●●				
Lance/Platoon/Battery (Flight)	●●●				
Augmented Lance*	[●●●]	Level II	□□	Star	★
Company (Squadron)	I	Choir (WoB)	⊣□□▬	Binary/Nova	★★/✧
Company Task Force*	⊓				
Battalion (Wing)	II	Level III	□□□	Trinary/SuperNova Binary	★★★/✧✧
Battle Group*	⊓⊓				
Regiment (Group/Air Regiment)	III			SuperNova Trinary	✧✧✧
Brigade/SLDF RCT	X	Level IV	□	Cluster	✪
Division/FedCom RCT	XX			Galaxy	◎
Corps	XXX	Level V	□□		
Field Army	XXXX	Level VI	□□□	Touman	(Clan Insignia)
Army Group	XXXXX				

* When these units are so designated, they take that base unit and attach other types of combined arms units to it in order to make a combined arms group under the command of the individual in charge of the normal unit. Lieutenant, Captain, and Major or Lieutenant Colonel equivalents.
These units are 50-100% larger than standard units. An Augmented Lance has 6-8 individual combat units, a Company Team has 18-24 units and a Battle Group has 54-72 units.
There are substantial differences in how a unit is defined by House/Faction, especially in the area of Infantry and BA Infantry formations. All sides will use the size indicator in use by that unit's parent faction. It is the soldier's responsibility to know the difference between forces.

Battalion it is black and red for the Draconis Combine, while the Forty-eighth Battle Armor Battalion is yellow and gold for our own Federated Suns.

With the frame as our starting point, the top of the frame shows us the size of the unit represented. The unit size modifier was standard during the days of the original Star League; one should keep in mind the differences between relatively approximate unit sizes when comparing the forces of major factions. Often a half box, or tent, is placed over the unit size indicator; it tells us that this particular unit is mixed, usually BattleMechs and combat vehicles or some type of infantry.

Please pull up Diagram Two, which contains a chart for comparing the relative size of a defined unit, along with close approximations between existing nations, ComStar, Word of Blake and Clan forces. Now looking from the left side to the right, we see the echelon designator. Pay close attention to the unit echelon designator when checking unit's depiction. Keep in mind that the unit size and echelon designator should refer to the same level of description. The Second Company includes an I at the top of the frame to denote Company unit size, while the II above the frame for the Forty-Eight Battle Armor Battalion indicates a battalion unit size.

The right side of the frame is the unit's next highest echelon of command, its "parent" organization, so to speak. Bear that in mind as you refer back to Diagram One. For the Second Company, Third Battalion, the number on the left is 2, the Unit Echelon size indicator. On the right you then have a 3 for the Third Battalion, the next highest echelon of command. Then a 1/1 for First Genyosha Armor, First Genyosha, the next two echelons of command. For the final echelon of command, the GEN refers to the Genyosha combat command as a whole.

The Forty-eighth Battle Armor Battalion follows the same basic pattern. On the left is 48 for the Unit Echelon size indicator. On the right, in succession, are AIB, DAG, and RCT for each of the subsequent higher echelon forces: Davion Assault Guards Infantry Brigade and Davion Assault Guards RCT.

Now let's focus on the center frame. Please pull up Diagram Three. I know your eyes might be glazing over at this display, but trust me. Once you spend a little time training, you'll be able to instantly pick out a frame and describe all the most salient points that matter on a battlefield in short order concerning any unit. There's a lot of information to digest, so let's take what we already know about what goes on outside the frame, and apply that to what appears inside the frame.

The icon shown in the center of the frame is the primary or predominant unit type you are facing. That icon will be based on the unit's type and motive system: 'Mech, hover vehicle and so on. As a reminder, these symbols are not limited to military units and applications, but cover civil ones as well. For the Forty-eighth Battle Armor Battalion we've got the crossed lines of infantry, while the comb indicates a hover vehicle for the Second Company, Third Battalion.

Beside that icon, above or to the right, additional information appears, such as capability and special mobility modifiers. We currently use three additional specialty modifiers—one for battle armored infantry, one for vehicle information, and a generalized specialty modifier. These modifiers may or may not be present, depending on available intelligence.

The battle armor modifier consists of a standardized three-letter designation for the type of suits. The first letter is the suit's weight class, followed by either the first two letters of the suit's name or the first letter in the first two words of the suit's name. For example, Fa Shih battle armor would be MFS, a Shedu suit is designated as ASH and Tornado P(AL) as PTO. Once more referring back to Diagram One, the Forty-eighth Battle Armor Battalion includes MCA at the top of the frame: Medium battle armor, Cavalier.

Some commanders prefer to know the characteristics of certain units, and so they use this modifier to indicate specialized information. BattleMechs and armored vehicles display the unit's weight classification letter or occasionally the first letter of the name of a specialized vehicle, which is standard for civil craft. If you look at the Second Company, Third Battalion, you'll see the L in the upper right-hand side of the frame, indicating a light weight class.

WarShips, stellar or wet-navy, use letter codes to depict the class of vessel represented. JumpShips utilize Roman numerals that define the DropShip carrying capacity of the ship in question.

Specialized systems, such as any type of C^3 computer, have required their own designators in recent years. This addition has become more common since the Jihad to indicate forces so equipped. Again, looking at Diagram One, the Second Company, Third Battalion in the bottom, right-hand corner has the Special Modifier indicating it is C^3-equipped.

Some commanders also try and note the Technology Status and Operation Status of a unit. However, this information is not uniformly used across the Inner Sphere, primarily due to the difficulties of obtaining such information, as well as its subjective nature. An example of this can be found on the Second Company, Third Battalion frame in Diagram One. When such information is employed it is displayed in this manner.

The upper, left-hand side includes a two letter code: I for Inner Sphere or "C" for Clan. It then either includes an A-F Tech Rating for an Inner Sphere command—stretching from cutting edge to the dredges of the Succession Wars—or a 1 or 2 for Clan front-line, or second-line.

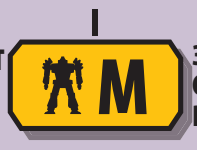
In the bottom, left-hand corner of the frame, another two letter code may appear, the Operational Status. This is the subjective part that most field commanders are loath to trust. The first letter represents the experience rating of the command: E for Elite, V for Veteran, R for Regular or G for Green. The second letter represents the Loyalty Rating: F for Fanatical, R for Reliable and Q for Questionable.

There are many nuances that we'll not have time to discuss today. For example the use of the headquarters symbol, with horizontal line inside the top of the frame if Command & Control are actively used. Or if an infantry vehicle carrier is unloaded it loses the shaded crossbar. And so on. However, Diagram Three is your friend, as it contains all the appropriate icons, along with explanations for such nuances. Study it thoroughly.

It's important to note that icons can be combined to create a variety of symbols that can accurately depict almost any type of unit. For those still not quite following yet, pull up Diagram Four. This displays numerous units from a host of factions, encapsulating everything discussed so far. Please review at your leisure, comparing Diagram Four with Diagram Three. The bottom of Diagram Three also displays several more unusual icon combinations, demonstrating that regardless of unit type involved, a frame and icons can be modified to create an appropriate symbology.

Again, to clarify a longstanding misconception—in the event of a unit composed of mixed forces, the predominant or majority unit present, such as BattleMechs, will be indicated by the icon as if it were a BattleMech unit…

• DIAGRAM THREE — EXAMPLE UNIT SYMBOLOGY •



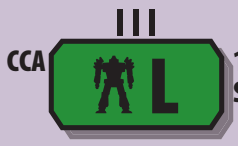
Fox's Teeth (McKinnon's Raiders)
3rd Battalion
7th Crucis Lancers RCT [3069]



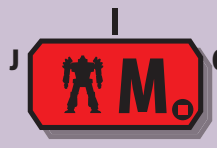
Achernar Sarna March Militia [3058]



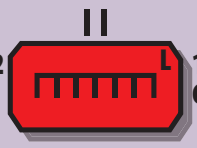
Red Squadron, 1st Wing
Hell's Black Aces



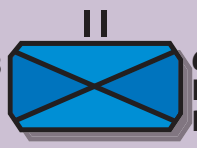
Combat Command Alpha
1st Janissary Brigade
St. Ives Janissaries



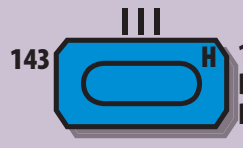
Jisatsu Company (Sorenson's Sabres)
Otomo [3068]



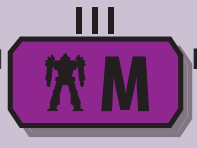
2nd Battalion
12th Galedon Regulars Armor
12th Galedon Regulars



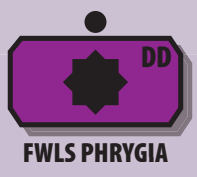
8th Lyran BAB
6th Lyran Guards Infantry Brigade
6th Lyran Guards



143rd Donegal HA(R)
17th Donegal Guards Armor Brigade
17th Donegal Guards



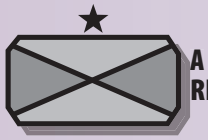
1st Knights
Knights of the Inner Sphere



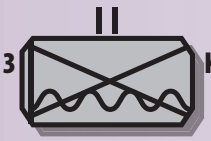
FWLS Phrygia
Impavido Class Destroyer



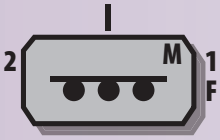
Gamma Regiment
Wolf's Dragoons



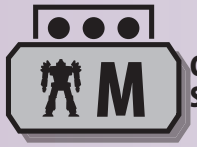
1st Star, Alpha Trinary, Raging Horde



3rd Battalion, The Mermen
Kraken Unleashed



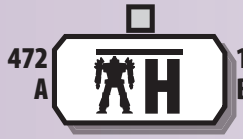
2nd Company, 1st Battalion
The Furies



1st Patrol (Augmented Lance)
Command Troop, 13th Stalking Horse



Basilisk Assault Squadron
The Medusans



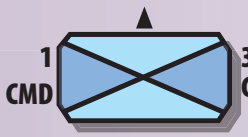
472nd Division (Invader Galaxy) IV-A
12th Army V-B, Com Guards



Jenkins Choir
Enlightened Ascension III-Eta
45th Shadow Division [3070]



Jade Falcon Guards, Gamma Galaxy
Clan Jade Falcon



1st Point, Command Star, 3rd Claw
Zeta Galaxy, Clan Ghost Bear

CONCLUSION

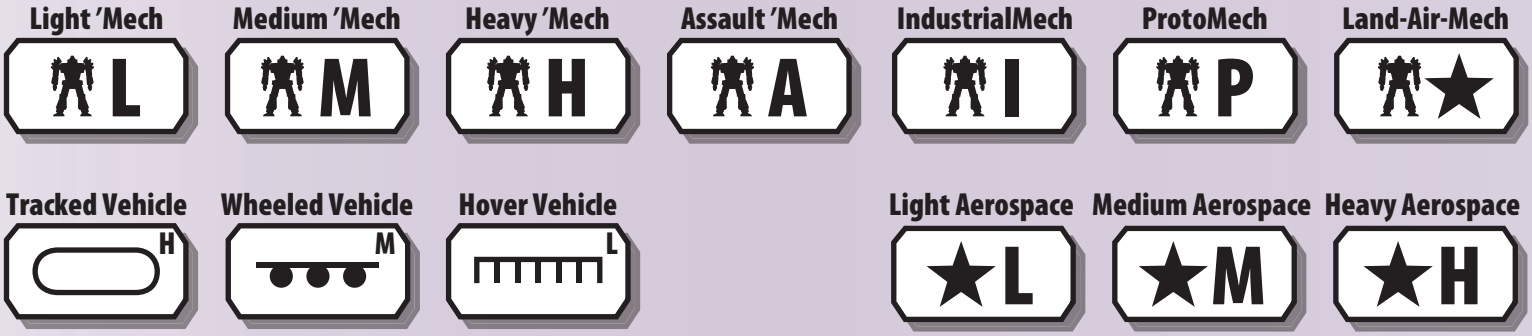
"…And in conclusion, this course should permit you all to create any symbols you might find necessary. In the unlikely event you discover something or need to create something new in the future, remember to submit your proposal to the MIIO Battle Staff office here on New Avalon."

Major Williams noticed the lights beginning to dim as the holoprojector flickered. Power loss. The cadets began to murmur among themselves as the emergency lights came on.

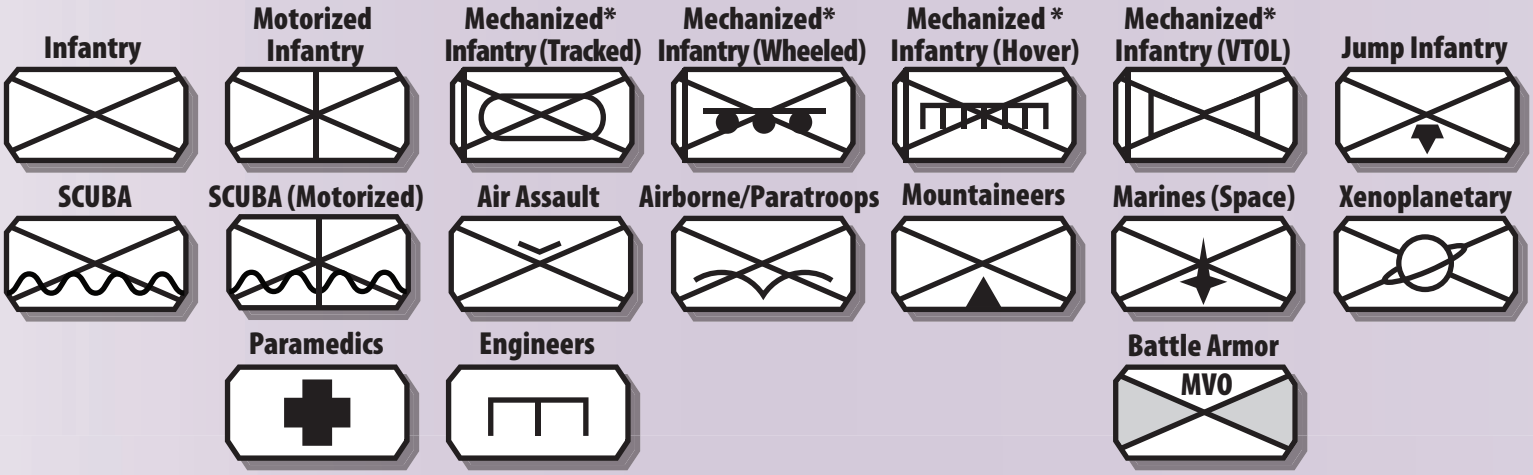
An Academy messenger entered through the back and jogged up to the podium. The news was grim. Williams nodded and removed her glasses, carefully considering how to keep the class calm.

"Attention, cadets. Word of Blake forces are now 100 kilometers away from the Academy. You are to report to receive your assignments for the defense of Avalon City. If your MOS is in a combat capacity, you will report to the Deputy Commandant at Fox Bay Green by 1100 hours. Those assigned to support capacity will report to me at Hound Bay Blue by 1030 hours. I hope those of you in my group remember what we discussed this morning, I really do… all our lives may depend on it."

• DIAGRAM FOUR — COMPREHENSIVE SYMBOLOGY •



Vehicle Modifiers: Light (L), Medium (M), Heavy(H), Assault (A), Support (S).



*The vertical line on the left indicates Mechanized. Dismounted Mechanized Infantry do not display the vehicle type, but retain the vertical line. Likewise, unloaded APCs and IFVs display the vertical line, but not the infantry crossbars.



Vehicle Modifiers: Class initials.



Vehicle Modifiers: Class initials.



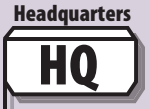
Drones are depicted by placing a solid, inverted trapezoid over the icon, and adding the Recon icon.
Drone Carriers additionally add two vertical stripes on the left side of the frame, and remove the Recon icon when unloaded. A vehicle converted to a Drone uses a hollow inverted trapezoid over the icon.
Vehicle Modifiers:
Drone: Class initials. For example, NapFind (NF) and PathTrack (PT).
Drone Carrier: Class initials.
Drone, Converted: As per original unit.



Vehicle Modifiers:
Dropship: Assault (A), BattleMech Transport (B), Cargo (C), AeroSpace Fighter Carrier (CV), Aero Refueling Tanker (G), Search and Rescue (H), Medical Evacuation (M), Passenger (P), Converted/Specialty (Q), Rescue (R), Strike (S), Tug (T), Experimental (X), Civil (Y; By extension: YC, YG, YH, YM, YP, YR, YT and YX).
Small Craft: Battle Taxi (BT), Drop Shuttle (DS), Escape Pod (EP), Life Boat (LB), Landing Craft (LC), Shuttle (ST), Bus (SB), and Long Range Shuttle (SL).
Jumpship: Roman numeral representing dropship capacity.
Warship: Corvette (PC), Surveillance (PS), Destroyer (DD), Destroyer Carrier (DCV), Destroyer Heavy (DH), Frigate (FR), Cruiser (CA), Cruiser Battle (CB), Cruiser Heavy (CH), Cruiser Pursuit (CP), Cruiser Transport (CT), Battleship (BB), Aerospace Carrier (CV), Warship Transport (AP), Mobile Yard (MY).
Space Station & Satellite: Class initials.



Vehicle Modifiers:
Aviation: Attack (A), Bomber (B), Cargo (C), Firefighter (F), Air Refueling Tanker (G), Search and Rescue (H), Medical Evacuation (M), Passenger (P), Recon (R), Sea Lander (S), Trainer (T), Utility/Support (U), Experimental (X) and Civil Usage (Y; By extension: YC, YF, YG, YH, YM, YP, YS, YU and YX).
WiGE, Airship, Unmanned Aerial Vehicle: Class initials.



A horizontal line at the top of a Headquarters frame indicates Command & Control, only if actively being used.

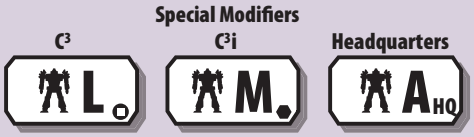
A staff (a line extending down from the left side of the frame) displays where the HQ is actually located on a map.



Vehicle Modifiers: Class initials.
Naval (Water): Submarine (SS), Corvette (PC), Surveillance (PS), Destroyer (DD), Destroyer Carrier (DCV), Destroyer Heavy (DH), Frigate (FR), Cruiser (CA), Cruiser Battle (CB), Cruiser Heavy (CH), Battleship (BB), Aircraft Carrier (CV), Naval Refueler (LG), Naval Transport (LP), Naval Search and Rescue (LH), Naval Medical Ship (LM), Naval Tug (LT), Naval Experimental (NX), Mobile Yard (MY), Civil (Y; By extension: YLG, YLH, YLM, YLT, YMY, YNX).



Omni- units are distinguished by a horizontal line over their icons.

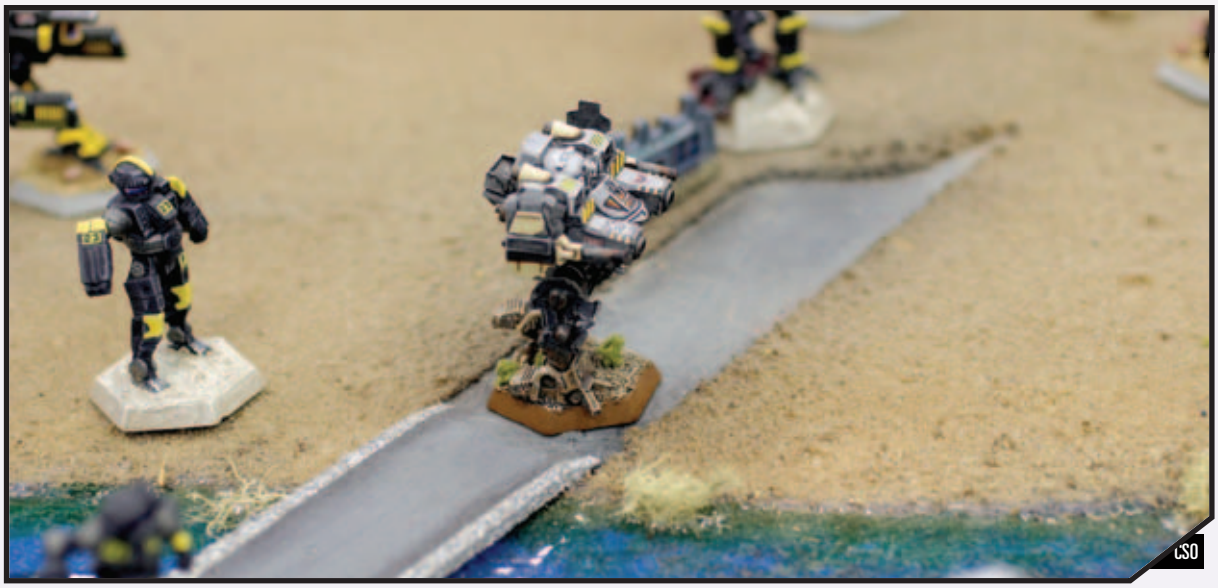


The HQ Special Modifier indicates the unit has Communications Equipment installed.

Icons can be combined to create a variety of symbols that accurately depict the units represented. Below are some sample combinations.



*Loaded with Inner Sphere Standard Battle Armor. If unloaded, it would lose the Battle Armor shaded crossbars and Infantry modifier, but would retain the shaded vertical bar on the left side of the frame. A shaded bar indicates the vehicle is equipped to carry Battle Armor, unshaded would indicate a vehicle equipped to carry conventional infantry.



A force from Burr's Black Cobras strikes at the flanks and rear of a Word of Blake force, catching a slow-moving Fafnir.

The following rules provide an addendum to the standard and advanced *BattleForce* rules.

The first section, Special Abilities, provides rules for the use of any equipment that stands outside the standard or advanced rules. Additionally, some special abilities are granted based upon the type of Element or its position in the Chain of Command. The section titled *Converting BT Elements to BattleForce* provides complete rules on how to fully convert a *BattleTech* unit (including player's own designs) to a *BattleForce* Element (see p. 213) and vice versa.

SPECIAL ABILITIES

Special abilities are modifications to an Element's performance created by equipment or Element type. While most of these provide Elements with additional capabilities, some special abilities denote limitations or restrictions. If a special ability contradicts the rules (either standard or advanced), the ability takes precedence. If two special abilities contradict each other, refer to the detailed ability description for additional instructions. Elements may have multiple special abilities.

The Special Ability Table summarizes the effects of each ability and provides the abbreviation for each. The following section, *Special Ability Descriptions and Conversion Rules*, describes the abilities in detail.

SPECIAL ABILITY DESCRIPTIONS AND CONVERSION RULES

Each ability is listed with its abbreviation in parentheses, followed by a description of its effects. Some abilities function differently under standard and advanced rules, and have separate entries for each. If an ability lists only one set of effects, it functions identically under either set of rules.

The Conversion entry describes what *BattleTech* equipment is required to receive the special ability in *BattleForce* and provides additional conversion notes where applicable (see *Converting BT Elements to BattleForce*, p. 355). In some cases, multiple different

SPECIAL ABILITY TABLE

Ability	Abbreviation	Effect Summary	Ref
Active Probe	PRB	Adds to the range of sensor spotting and reveals hidden Elements	345
Advanced Fire Control	AFC	Disregards some to-hit modifiers	345
Aerospace Transport	AT#	Transports # of Aerospace/Conventional Fighters	345
Amphibious	AMP	Non-naval Element capable of water movement	345
Angel ECM	AECM	Blocks Active Probe (PRB) and C^3 with additional range	345
Anti-'Mech	AM	Make swarming attacks	345
Anti-Missile System	AMS	Reduce damage by 1 if attacker has the IF, LRM, or SRM abilities.	345
Armored Component	ARM	Ignore the first critical hit	345
Armored Motive System	ARS	–1/–2 on Motive Systems damage checks	345

SPECIAL ABILITY TABLE (CONTINUED)

Ability	Abbreviation	Effect Summary	Ref
Artillery	ARTX-#	Element has an artillery attack	345
Atmospheric	ATMO	Limited to atmospheric flight	345
Autocannon	AC X/X/X/X	Tracks an Element's damage with autocannon weapons	345
BAR	BAR	Element is protected by BAR 1-9 armor or commercial armor	345
Basic Fire Control	BFC	Disregard some to-hit modifiers	346
BattleMech HarJel	BHJ	Reduced critical hit chance in water and vacuum	346
BattleMech Shield	SHLD	Reduced weapon attack damage by 1, but +2 modifier to attacks	346
Bloodhound	BH	Bloodhound Active Probe detects hidden Units	346
Bomb	BOMB#	This Element can carry # of bombs	346
Booby Trap	BT	Element may self-destruct	346
Bridgelayer	BRID	Creates a temporary bridge	346
C^3/C^3I Boosted System	C3BS#	As C3, but is immune to ECM interference except from Angel ECM	346
C^3 Emergency Master Computer	C3EM#	Network Elements and other C3M for attack bonuses	346
C^3 Master Computer	C3M#	Network 3 Elements and other C3M for attack bonuses	347
C^3 Remote Sensor	C3RS#	Element can deploy static C3 sensors	347
C^3 Slave Computer	C3S#	Connects to a C3M for attack bonuses	347
C^3 Improved Computer	C3I#	Network 6 Elements for attack bonuses	347
Capital	CAP	Element has capital weaponry (non-missile)	347
Cargo Transport (Kilotons)	CK#	Element can transport # of kilotons of cargo	347
Cargo	CAR#	Element occupies # tons of transport space	347
Cargo Transport (Tons)	CT#	Element can transport # of tons of cargo	347
CASE/CASE II	CASE/CASE II	Elements with this ability can survive Ammo Hit critical hits	348
Door	D#	Element has # of doors for loading/unloading Elements	348
Drone	DRO	Element is a remote drone	348
Drone Carrier Control System	DCC#	Element can control # of remote drones	348
DropShip Transport	DT#	Transports # of DropShips	348
Ejection Seat	ES	Element equipped with ejection system that may save pilot	348
Electric Energy Engine	EEE	Element mounts an electric, fission or fusion (any type) engine	348
Electronic Countermeasures	ECM	Blocks Active Probe (PRB) and C3	348
Energy	ENE	Element mounts only energy weapons	348
Engineering	ENG	Element can clear rubble and woods hexes	348
Environmental Sealing	SEAL	Element may operate in hostile environments	349
Extended Mechanized	XMEC	Battle Armor may ride on any 'Mech or Vehicle Element	349
Fire Resistant	FR	Not affected by inferno attacks or Heat (HT) weapons	349
Flak	FLK#	Bonus to-hit aerospace Element, VTOLs and WiGEs	349
Flight Deck	FD	Capable of launching/landing conventional fighers and VTOLs	349
Heat	HT#	Attacks from this Element generate heat for the target	349
Helipad	HELI	May lift off and land VTOL Elements from this Element	349
Hyperpulse Generator	HPG	Element mounts and HPG	349
iNarc	INARC#	May make an additional attack with Narc beacons or special ammo	349
Indirect Fire	IF#	Can fire over intervening terrain	349
Industrial TSM	I-TSM	Additional MV and +1 physical attack damage	349
Infantry Transport	IT#	Element has # tons of infantry transport space available	349
Kearny-Fuchida Drive	KF	Element can make hyperspace jumps	350
Large	LG	Element is considered Large for stacking purposes	350
Leader	LEAD	Element generates Command Points	350
Light Active Probe	LPRB	Reveals hidden Elements within 1 hex	350
Light ECM	LECM	Same as ECM, but with a 1-hex range	350
Light TAG	LTAG	Designates a target for artillery attacks; max range: Short	350
Lithium-Fusion	LF	Element mounts lithium-fusion batteries	350
Long Range Missile	LRM X/X/X/X	Tracks an Element's damage with LRMs	350
Maglev	MAG	Element restricted to maglev rails	350

SPECIAL ABILITY TABLE

Ability	Abbreviation	Effect Summary	Ref
'Mech Transport	MT#	Transports # of 'Mechs	350
Mechanized	MECH	Battle Armor Element may ride on Omni Elements	350
Melee	MEL	Element has a physical attack weapon	350
Mimetic Armor Systems	MAS/LMAS	Attacks against Element suffer to-hit penalties	350
Mine Dispenser	MDS#	Element may deploy mines	350
Minesweeper	MSW	Eliminates minefields	350
Missile	MSL	Element has capital and/or sub-capital missile launcher(s)	351
Mobile Army Surgical Hospital	MASH#	"Heals" injured infantry Units	351
Mobile Field Base	MFB	Bonus on Repair Rolls	351
Mobile Headquarters	MHQ#	Helps identify Blips and adds Command Points	351
Narc Missile Beacon	S/CNARC#	May make an additional attack with Narc beacons	351
Naval C^3	NC3	Network Aerospace Elements for attack bonuses	351
Off-Road	ORO	Supports Elements that have off-road modifications	351
Omni	OMNI	Element is an Omni Element	351
Point Defense	PNT#	Destroys Capital Missile or reduces their chance of hitting	351
ProtoMech Transport	PT#	Transports # of ProtoMech Points	352
Rail	RAIL	Element restricted to rails	352
Recon	RCN	Reconnaissance Element grants initiative bonus, helps ID Blips	352
Remote Sensors Dispenser	RSD#	Element may deploy up to # of remote sensors	352
Saw	SAW	Element can clear woods hexes	352
Screen	SCR#	Launches screen clouds that obscure LOS	352
Searchlight	SRCH	Eliminates penalties for night combat	352
Short Range Missiles	SRM X/X/X/X	Tracks an Element's damage with SRMs	352
Space Craft Transport	ST#	Transports # of Small Craft	352
Space Defense System	SDS#	Element can make surface-to-orbit attacks	352
Space Ops Adaptation	SOA	Element is outfitted for space operations	352
Spaceflight	SPC	Element is capable of space flight	353
Stealth	STL	Stealth Armor: +1 to-hit at medium range; +2 at long range	353
Sub-Capital	SCAP	Element has Sub-Capital weapons, but not Sub-Capital missiles	353
Super Large	SLG	Element occupies 3 or more hexes	353
Target Acquisition Gear	TAG	Designates a target for artillery attacks; max range: Medium	353
Taser	M/BTAS#	The Element mounts one or more tasers	353
Tele-Operated Missiles	TELE	The Element has Tele-Operated Missile launchers	353
Torpedo	TOR	Element has a separate underwater attack	353
Triple-strength Myomer	TSM	Additional MP and +1 physical attack damage when Element is 2+ on heat scale	353
Turret	TUR	Element has one or more turrets with 360° field of fire and extra attacks	353
Underwater Maneuvering Unit	UMU	Element moves underwater like a submarine	354
Variable Range Targeting	VRT	Enables cycling of different targeting and tracking modes	354
Vehicle Transport	VTX#	Transports # of X-type vehicles	354
Very Large	VLG	Element occupies 2 hexes	354
VSTOL	VSTOL	Vertical/Short take-off and landing	354
Watchdog	WAT	Combines Active Probe (PRB) and ECM	354

ARTILLERY ABBREVIATION TABLE

Artillery Type	Abbreviation
Arrow IV (IS)	AIS
Arrow IV (Clan)	AC
Thumper	T
Sniper	S
Long Tom	LT
Cruise Missile/50	CM5

Artillery Type	Abbreviation
Cruise Missile/70	CM7
Cruise Missile/90	CM9
Cruise Missile/120	CM12
Thumper Cannon	TC
Sniper Cannon	SC
Long Tom Cannon	LTC

pieces of equipment confer the same ability. In others, multiple components are required to receive a single ability. There are no partial abilities; an Element either has all of the requisite equipment or it does not. When converting a damaged Element to *BattleForce* statistics, all required equipment must be fully functional to confer special abilities.

Many special abilities are followed by a numeric designator; for example, MT4 indicates an Element is capable of transporting 4 'Mechs.

ACTIVE PROBE (PRB)

Elements equipped with active probes have an extended view of the battlefield, enabling them to provide information about targets without moving into short range (see *Concealing Record Sheets*, p. 280). This special ability automatically confers the Recon (RCN) special ability and allows the Element to detect hidden Elements (see *Hidden Units*, p. 320)

Conversion: Any active probe.

ADVANCED FIRE CONTROL (AFC)

IndustrialMechs and Support Elements equipped with Advanced Fire Control do not add to-hit modifiers for their Element type.

Conversion: Advanced Fire Control

AEROSPACE TRANSPORT (AT#)

An Element with this special ability can transport, launch and recover the indicated number of aerospace or conventional fighters (see *Transporting Elements*, p. 324).

Conversion:

Aerospace Fighter Bay: This ability usually applies to DropShips, and is always used in conjunction with the Door special ability. Record this ability as ATxDy, where x is the number of aerospace fighters transported by the Element and y is the number of aerospace bay doors available to the bay (see *Door*, p. 348).

Flight Deck/Helipad: This ability applies to Large Support Vehicles and Mobile Structures. Record this ability as ATxFy or ATxHy, where x is the number of aerospace fighters transported by the Element and y is the number of flight decks or helipads on the transport Element. Flight decks and helipads must be recorded separately.

AMPHIBIOUS (AMP)

This ability makes a non-naval Element capable of water movement. Amphibious Elements pay a total of 2 MP per water hex traversed and move as a surface Naval Element in water, except that they freely move in and out of water hexes.

Conversion: Amphibious Chassis Modification

ANGEL ECM (AECM)

An Angel ECM suite has all the advantages of a standard ECM suite. Additionally, it blocks Bloodhound Probes as if they were Active Probes. Angel ECM is treated as two standard ECM suites.

Conversion: Angel ECM

ANTI-'MECH (AM)

Elements with this ability may make swarming attacks as described in Specialty Infantry (see p. 322).

Conversion: The ability to make anti-'Mech attacks.

ANTI-MISSILE SYSTEM (AMS)

An Element with an AMS reduces by 1 the damage of strikes by attackers with the Indirect Fire (IF), LRM, or SRM abilities (to a minimum of 1) as long as the attack comes from the front.

Conversion: Any Anti-Missile System (including Laser AMS) Except for Large Craft AMS Bays, *BattleForce* treats these as Point Defense Weapons.

ARTILLERY (ARTX–#)

This special ability lets an Element make an artillery attack. Record each type of artillery separately. If an Element has multiple artillery weapons, include the number of each. For example, an Element with two Long Toms would record this ability as ARTLT-2. Refer to the Artillery Abbreviations Table, on page 344 (see the *Bomb (BOMB#)* special ability, p. 346, for Arrow-IV missiles as bombs).

Conversion: Any artillery weapon

ARMORED COMPONENT (ARM)

An Element with this ability ignores the first critical hit chance rolled against it. The first time circumstances arise that would normally generate an opportunity for a critical hit (such as structure damage), the chance is lost.

Conversion: Any armored component.

ARMORED MOTIVE SYSTEM (ARS)

An Element with this special ability applies a –1 modifier on the Chance for Motive Systems Damage roll and a –2 modifier for the Effect of Motive Systems Damage roll (see Determining Motive Systems Damage Table, p. 232).

Conversion: Vehicle Element type and Armored Motive System

ATMOSPHERIC (ATMO)

An Element with this ability is incapable of space flight. Airships and VTOLs automatically receive this ability and may not enter the High-Altitude Map. Conventional fighters, and fixed-wing support vehicles also get this ability and may enter the high altitude map, but are restricted to the ground row, and row 1.

Conversion: Conventional Fighter Chassis, VTOL Movement Mode, Airship chassis type and Fixed-Wing support vehicle chassis type.

AUTOCANNON (AC X/X/X/X)

This ability tracks an Element's light and standard autocannon damage if it can do 10 or more points of damage. It is added to all attacks except Indirect Fire and turrets, though an Element may have autocannon damage as part of a turret profile and some Elements may have an AC damage value as part of their firing arcs. Additionally, a player may use specialty ammo (see *Alternate Munitions,* p. 308).

Conversion: Light or Standard Autocannon that can do 10 or more points of damage at medium range. Record this ability as AC X/X/X/X where X is the damage value for each range bracket.

BAR (BAR)

An Element protected by BAR armor with a rating of 1 to 9 (or commercial armor) may suffer a critical hit any time it takes

damage regardless of whether or not structure is damaged.

Conversion: BAR armor with a rating of 1–9 or commercial armor

BASIC FIRE CONTROL (BFC)

A Support Element or IndustrialMech with this special ability has a to-hit modifier of +1 for its attack. A Support Element without this ability has a to-hit modifier of +2 for its attack.

Conversion: Basic Fire Control

BATTLEMECH HARJEL (BHJ)

A 'Mech protected by HarJel ignores critical hit chances caused by being underwater or in a vacuum. Critical hit chances from structure damage (and other sources) still apply.

Conversion: 'Mech Element type and BattleMech HarJel in the Center, Left and Right torsos

BATTLEMECH SHIELD (SHLD)

'Mech shields provide some protection against weapons and physical attacks at the expense of attack accuracy. An Element with this special ability reduces damage from most weapons and physical attacks by 1 point to a minimum of zero. Indirect attacks and area-effect attacks (artillery and bombs) do full damage. All weapon attacks made by an Element with this ability incur an additional +2 to-hit modifier.

Conversion: 'Mech Element type and any size shield

BLOODHOUND (BH)

A more sophisticated version of the Beagle Active Probe, the Bloodhound Active Probe is not affected by standard ECM or Light ECM. It can be used for identifying Blip counters and determining the variant of a given Element (see *Concealing Record Sheets*, p. 280). This special ability automatically confers the Recon (RCN) special ability.

Conversion: Bloodhound Active Probe

BOMB (BOMB#)

Conventional and aerospace fighters can carry bombs. Light fighters can carry 2 bombs, medium fighters can carry 3 bombs, and heavy fighters can carry 4. This is denoted by the bomb (BOMB#) special ability, where the number equals the number of bombs that may be carried by the Element. Fixed-Wing Support Vehicles can carry 1 bomb for every 5 external hardpoints. Arrow-IV missiles may be carried as bombs. The first Arrow-IV missile (regardless of type) takes 2 *BattleForce* bomb slots, each additional Arrow-IV missile takes 1 *BattleForce* bomb slot.

Conversion: Conventional fighter, aerospace fighter or Fixed-Wing Support Vehicle Element type

BOOBY TRAP (BT)

The booby trap is a last-ditch weapon. An Element with this ability has devoted considerable mass to a self-destruct mechanism. It may be activated during the Combat Phase in place of a weapon or physical attack. If activated, the system destroys the Element and delivers an area-effect attack in the Element's hex.

Activated on the ground, all Elements in the hex suffer damage equal to the booby-trapped Element's weight/size class times its MV. For example, a booby-trapped assault 'Mech with a MV of 3 would do 12 points of damage (weight class 4 x MV 3 = 12) to all Elements in its hex.

If the booby trap is activated in the air or in space, all Elements in the hex suffer damage equal to the booby-trapped Element's weight/size class.

Conversion: Any Element type (except ProtoMechs, Infantry and Battle Armor) and Booby Trap equipment

BRIDGELAYER (BRID)

An Element with this special ability may deploy a temporary bridge capable of spanning a gap up to 30 meters. Multiple bridges may be linked together to extend the reach of an existing bridge. Deploying or extending a bridge takes one turn, during which the bridgelayer cannot move. After the bridge is deployed, the bridgelaying Element may move normally. A bridge does not need to be deployed such that each side of the bridge rests on solid ground; it may be deployed as a makeshift dock extending into a water hex.

Bridges deployed by Bridgelayers can support Elements up to Weight Class 3 or Size Class 2 (except for Size Class 2 Rail Elements). All bridges automatically float as they contain integral flotation devices by design. A bridge may be targeted like a building and is destroyed once it has taken 18 points of damage. When a bridge is reduced to 10 points or less, it may only support up to Weight Class 2 and Size Class 1 Elements. When it is reduced to 5 or fewer points it may only support Weight Class 1 and Size Class 1 Elements.

If an Element that exceeds a bridge's weight class attempts to use it, the bridge immediately collapses before the Element is able to cross. The Element falls and suffers 1 point of damage per 3 Levels (or fraction thereof) of difference between the starting hex and destination hex (roll for critical hits normally). If the Element lands in prohibited terrain as a result of a bridge collapse, it is destroyed.

Even though *BattleForce* hexes are 90m across, a single 30m bridge may be used to cross a body of water that is one hex wide. Bridge placement is assumed to take advantage of the irregular width of the body of water, creating a safe crossing at a "narrow" point. For bodies of water more than one hex wide, the correct number of bridges (i.e. 3 per hex) must be used.

Conversion: Bridgelayer

C^3/C^3I BOOSTED SYSTEMS (C3BS#)

A C^3 boosted system works identically to a standard C^3 system except that most ECM does not affect it. Angel ECM affects it in the same way as standard ECM affects standard C^3 systems, but all other ECM is ignored. Boosted systems are incompatible with standard systems and may not be interchanged. C^3 boosted systems are available in Slave and Master versions. Refer to C^3 Master Computer below for game effects.

Conversion: A C^3 boosted master or slave. Record this ability as C3BSX# where X is the type (Master or Slave) and # is the number of C^3 boosted master computers; omit the # if one or less.

C^3 EMERGENCY MASTER COMPUTER (C3EM#)

A C^3EM system activates during the End Phase of any turn in which the network's C^3 master cannot be contacted (either due to destruction or envelopment by ECM). The emergency master runs for 2 consecutive turns (not counting the turn in which it activates), shutting down in the End Phase of the second turn. While running, the C^{3EM} system duplicates all functions of a C^3 master computer.

Conversion: A C^3 emergency master. Record this ability as C3EM# where # is the number of emergency masters. Omit the # if one or less.

C³ MASTER COMPUTER (C3M#)

The C³ Master computer enables up to four Elements to share targeting information and receive a to-hit bonus. One Element in a C³ network must mount a C³ Master computer. The remaining three Elements must mount C³ computers (either slave or master). Up to three C³ networks may be linked together (see pp. 131-133, *TW*).

Standard Rules: All C³ Elements must belong to the same Unit. All Elements in that Unit get a –1 to-hit modifier to their weapon attacks. The network may be expanded to include two additional Units (up to 12 Elements total; see p. 132, *TW*).

Advanced Rules: Under advanced rules, this system works almost identically to C³ as described in *Total Warfare* (see pp. 131-133). Units must be split or detached to gain the full benefit of the system.

To make an attack using a C³ network, calculate the to-hit number using the range modifier as if the attacker were the networked Element—not affected by an ECM bubble—nearest the target with line of sight. All other modifiers apply as normal. Damage is based on the actual range from attacker to target. Therefore, an attacking Element must have a Damage Value at the range corresponding to its actual range to the target. The attacking Element must also have valid LOS and the target must be in the attacker's firing arc. The C³ network itself has no maximum range, and does not improve indirect or physical attacks. The C³ Master (but not the C³ Slave) exactly duplicates the function of target acquisition gear.

Armor that inflicts range modifiers against attacking Elements does not confuse a C³ network. All C³ Elements use the range modifier for Stealth armor as if they were the nearest C³ Element not affected by an ECM bubble. However, some such systems (notably the Stealth Armor System) include their own ECM system; in this case, an attacking Element must be outside the effective range of the ECM mounted on the target Unit, or the attacker is cut off from the network.

Conversion: A C³ Master Computer. Record this ability as C3M# where # is the number of C³ master computers carried by the Element. Omit the # if one or less.

Losing a C³ Network

The destruction (or ECM envelopment) of the Element carrying a C³ Master disables the network for all Elements linked through that master. In the case of ECM envelopment, the network resumes functioning once the Element with the C³ master is no longer in the ECM field.

Elements are only affected by the loss of the C³ master to which they link. The loss of another C³ master will not affect them unless it also affects the network (see p. 133, *TW*).

The destruction of a Unit carrying a C³ Slave has no effect on the rest of the C³ network.

C³ REMOTE SENSOR (C3RS)

A C³ remote sensor must be set to a particular C³ network when deployed and will have no effect if the network is "full" of Elements (that is, the remote sensor cannot expand a network past its size limit). In the turn following deployment, the remote sensor acts as a stationary C³ slave for the designated network. After one turn, the device exhausts its power supply and ceases to function. An Element with this ability may deploy 4 remote sensors per game.

Conversion: C³ Remote Sensor Dispenser

C³ SLAVE COMPUTER (C3S)

An Element equipped with a C³ slave can link into a C³ network as described above. Elements with C³ slaves but no master cannot create a network.

Conversion: C³ Slave Computer or Battle Armor C³ Slave

C³ IMPROVED COMPUTER (C3I)

The C³i computer enables up to 6 Elements to share targeting information and receive a to-hit bonus. Multiple networks cannot be linked together, and C³i is incompatible with C³.

Standard Rules: All C³i Elements must belong to the same Unit. All Elements in that Unit get a -1 to-hit modifier on their weapon attacks.

Advanced Rules: Elements may belong to any Unit. If Elements are all in the same Unit, they must be split or detached to gain the full benefit from the system. To make an attack using a C³i network, calculate the to-hit number using the range modifier as if the attacker were the networked Element—not affected by an ECM bubble—nearest the target with line of sight. All other modifiers apply as normal. Damage is based on the actual range from attacker to target. Therefore, an attacking Element must have a Damage Value at the range corresponding to its actual range to the target. The attacking Element must also have valid LOS and the target must be in the attacker's firing arc. The C³i network itself has no maximum range, and does not improve indirect or physical attacks.

Conversion: C³i Computer or Battle Armor C³i

Losing C³i

Because no master computer exists in an improved C³i network, the network cannot be shut down by the loss of a single Element. C³i ceases to function if it is within an ECM bubble (though Elements outside the bubble are unaffected), but resumes normal operation once moved outside the ECM bubble.

CAPITAL (CAP)

The massive weapons found in WarShips and the handful of remaining SDS Systems are essentially *much* bigger versions of their simpler cousins. Elements with these powerful weapons are capable of obliterating virtually anything in short order. Capital weapons have longer ranges than standard weapons and do their full damage in *BattleForce* scale.

Conversion: Any non-missile capital weapon

CARGO (CAR#)

An Element with this special ability can be carried by a Unit with transport space. The Element occupies transport space equal to its cargo rating; for example, a squad of Inner Sphere Standard battle armor has a CAR4 special ability, and so would need an Element with IT4 to transport it.

Conversion: Infantry or battle armor Element type. Refer to the Cargo Table for the amount of cargo space required.

CARGO TRANSPORT–KILOTONS (CK#)

This ability is identical to the Cargo Transport–Tons ability, except that the cargo is designated in 1,000-ton lots.

Conversion: At least 1,000 tons of cargo bay space.

CARGO TRANSPORT–TONS (CT#)

Elements with this ability have bays or other internal space set aside for carrying cargo: munitions, supplies and the like.

This space is not suited for transporting battle-ready Elements (see *Elements as Cargo*, p. 326). This ability usually applies to DropShips, and is always used in conjunction with the Door special ability.

Conversion: Cargo bays (other than 'Mech, aerospace fighter, ProtoMech, battle armor or Vehicle). Cargo Transport receives a numerical rating equal to the tons of cargo carried; for example, 5 tons of cargo would be recorded as CT5.

CASE/CASE II (CASE/CASEII)

Elements with this ability can survive Ammo Hit critical hits (see *Ammo Hit*, p. 230).

Conversion: Clan Element with explosive ammo. Inner Sphere Element with explosive ammo or weapons and CASE or CASE II.

DOOR (D#)

This ability indicates the number of ingress/egress doors available on a DropShip, Small Craft, Support or Transport Element's bay. Each door is tied to a particular bay, and can accommodate a limited number of Elements per turn (see *Transporting Elements*, p. 324).

Conversion: A bay door. Infantry (including battle armor) transport bays do not track door usage in *BattleForce.* Doors are linked to all other bay types. Record this ability, linked with a transport ability, as xDy, where x is the type of bay and y is the number of doors available to it.

DRONE (DRO)

Ground drones must stay within 450 hexes (26 *BattleForce* mapsheets) of their control vehicle, unless the control vehicle is airborne or in orbit, in which case range is functionally limitless for a ground game. In space, drones need only remain within LOS to their controller, as the actual range limit in hexes is more than 50,000.

Drones may spot for indirect fire.

Drones enveloped in a hostile ECM field shut down during the End Phase of the turn in which they were trapped by the field. They remain shut down until the ECM field is no longer present. Drones restart automatically in the End Phase of the turn in which the ECM field is removed. If the drone control Element is caught by a hostile ECM field, all of its drones shut down until the ECM field is no longer present. In addition, if the LOS from a drone control Element to its drone passes through an ECM bubble, the drone will shut down. This is frequently avoided by the use of Satellite uplinks for drone control. If the drone control Element is eliminated, the drones shut down for the rest of the game.

Aside from these restrictions, drones operate as a normal Element of their type with a Skill Rating equal to the Skill Rating of the drone control Element plus 1.

Conversion: Drone Operating System

DRONE CARRIER CONTROL SYSTEM (DCC#)

Elements with the Drone Control Element (DCE) special ability may control 1 remote drone per drone operator, usually equivalent to the number of drones carried.

Conversion: Drone Control System. Record this ability as DCC# where # is the number of drones that the Element may control (see p. 305, *TO*).

DROPSHIP TRANSPORT (DT#)

An Element with this special ability can transport the indicated number of DropShips through the use of docking collars. A critical hit to a docking collar reduces this ability by 1.

Conversion: At least one docking collar. Record this ability as DTx, where x is the number of docking collars.

CARGO TABLE

Element	Cargo Space Required	Cargo Rating
Foot Infantry	3 Tons	Car3
Jump Infantry	4 Tons	Car4
Motorized Infantry	6 Tons	Car6
Mechanized Infantry	5 Tons*	Car5
Battle Armor	1 Ton**	Car1
Other Infantry	†	†

*Per 5 Troopers **Per Trooper †Refer to the original infantry rules for weight

EJECTION SEAT (ES)

The pilot of an Element with an ejection seat is automatically ejected if the Elements takes an Ammo critical hit (see *Ejection/Abandoning Elements*, p. 314).

Conversion: Ejection seat

ELECTRIC ENERGY ENGINE (EEE)

Elements with these engines may operate underwater or in space providing they have the Environmental Sealing Chassis and Controls modification. Without this engine type, the 'Mechs suffer no heat buildup from an engine hit, but explode on a 2D6 roll of 12.

Conversion: Electric, Fission or Fusion (any type) engine

ELECTRONIC COUNTERMEASURES (ECM)

An ECM suite's area of effect is a 1-hex radius from the Unit carrying it, meaning it creates an ECM bubble in the hex with the ECM-equipped Element and all 6 adjacent hexes. Friendly Active Probes or C^3 computers are not affected, nor does the ECM suite affect other scanning and targeting devices, such as TAG.

ECM has the following effects:

ECM vs. Active Probes: ECM negates the effects of Active Probes if the Element with the Active Probe is within the ECM bubble or draws LOS through the ECM bubble.

ECM vs. C^3 Networks: ECM disrupts C^3 networks, preventing their function depending upon the type of C^3 network. If a C^3 master Unit is isolated from the network because it ventures inside the ECM bubble (or the LOS to the Elements it controls passes through the ECM bubble), the entire portion of the network below it is effectively shut off and loses C^3 abilities. Only those C^3 Units able to draw a line of sight to the master Unit that does not pass through the ECM bubble can access the network.

If the master Element that connects the lances of a company lies inside the ECM effect radius (or the LOS to that Element passes through an ECM bubble), the link between the lances is lost, though each lance's network functions normally (unless the ECM also interferes with them individually).

If a C^3i-equipped Element is caught within the ECM bubble or draws its LOS to its partner C^3i Elements through an ECM bubble, the Element is isolated from the network and loses all C^3i abilities.

Conversion: Non-battle armor-scale ECM suite

ENERGY (ENE)

An Element with this ability ignores Ammo critical hits.

Conversion: No weapons or only energy weapons.

ENGINEERING (ENG)

An Element with this special ability can clear woods just like an

Element with the Saw special ability. In addition, an Element with this ability can clear a path through a rubble hex. It takes 1 turn for a Unit with 4 or more engineering Elements to clear a rubble hex, 2 turns for 3 Elements, 3 turns for 2 Elements and 4 turns for 1 Element. The hex does not change terrain type; the clearing action simply creates a path through the rubble.

Conversion: Backhoe, Bulldozer, Heavy Duty Pile-Driver, Mining Drill, Rock-Cutter or Wrecking Ball

ENVIRONMENTAL SEALING (SEAL)

An Element with this special ability may operate in hostile environments. 'Mechs, aerospace Elements, ProtoMechs, Combat Vehicles and Support Vehicles built as submarines are automatically treated as if they had this ability.

Conversion: Requires the Environmental Sealing chassis modification.

EXTENDED MECHANIZED (XMEC)

Battle armor with this special ability may function as Mechanized battle armor, and can ride on any type of ground Element (see *Mechanized Battle Armor*, p. 324.)

Conversion: Battle armor Magnetic Clamps

FIRE RESISTANT (FR)

Elements with this ability are not affected by infernos or other weapons that generate heat (HT#). If the heat-causing weapon deals damage in addition to causing heat, that damage still applies.

Conversion: Requires the Fire-Resistant chassis modification.

FLAK (FLK#)

Elements (excluding infantry & aerospace) with LB-X AC or HAG weapons may make a Flak attack with a –2 to-hit modifier against airborne aerospace, VTOL or WiGE targets. As with IF, this attack is in place of their normal attack.

Conversion: Calculate heat-modified damage for LB-X AC and/or HAG weapons both as part of base damage and separately; as with the Indirect Fire (IF) special ability. The numeric rating for this ability is the final damage for these weapons.

FLIGHT DECK (FD)

Only found on Very Large Transport Elements, a Flight Deck allows for the lift-off and landing of aerospace and conventional fighters, Small and Medium Airships, VTOLs, and Small and Medium Fixed-Wing Support or Transport Elements.

Conversion: Flight Deck

HEAT (HT#)

Elements with this ability add to the heat level of their target on a successful hit. If the target does not use a heat scale, it suffers damage equal to the attacker's heat rating in addition to the normal attack damage (see *Determine and Apply Damage*, p. 228).

Conversion: Heat-generating weapons. Add the total heat generated by all such weapons on the Element. Do not include special munitions. Add 2 points for each flamer, 3 points for each plasma rifle and 7 points for each plasma cannon. If the total heat generated is less than 5 points, the Element does not get the Heat special ability. If the total heat generated is between 6 and 10 points, the Element gets the Heat1 special ability. If the total heat generated is more than 10 points, the Element gets the Heat2 special ability.

HELIPAD (HELI)

This special ability allows an Element with the VTOL special ability to lift off from or land on this Element.

Conversion: Helipad

HYPERPULSE GENERATOR (HPG)

An HPG allows for interstellar communication between systems up to fifty light-years apart. It has no direct effect on *BattleForce* game play.

Conversion: Hyperpulse Generator

iNARC (INARC#)

An Element with this special ability may make an extra attack with each of its iNarc launchers. The attack has a max range of Medium. A target struck by this attack suffers 1 additional point of damage from all Indirect Fire (IF), LRM, and SRM attacks for the rest of the game—unless it is within an ECM bubble. Instead of their normal attack, iNarcs may fire special ammo (see *Alternate Munitions*, p. 308).

Conversion: One or more iNarc Launchers. Record this ability as I-NARC# where # is the number of launchers. An Element with 3 or more iNarc launchers should record this ability as I-NARC1 and does one additional point of damage at short or medium range instead of making an iNarc attack.

INDIRECT FIRE (IF#)

The Indirect Fire ability allows an Element to attack without having LOS to the target by arcing its attack over intervening obstacles in a way similar to mortars and artillery. The numerical rating indicates the amount of damage inflicted from a successful indirect attack. An indirect attack is made in place of an Element's normal weapon attack (see *Indirect Fire Attacks*, p. 225).

Conversion: LRMs (including ELRMs and NLRMs), MMLs, Thunderbolts or 'Mech Mortars. If an Element mounts these items, it will have the Indirect Fire ability. The numerical rating for the ability is equal to the final damage for all these weapons. Aerospace Elements and Fixed-Wing Support Elements do not get this ability, regardless of their weapons.

INDUSTRIAL TSM (I-TSM)

Elements with the Industrial TSM special ability move faster and do additional damage. The extra movement is already calculated in their *Total Warfare* statistics, and so no bonus is applied to their *BattleForce* stats. The Element also does 1 additional point of physical attack damage (standard and Melee physical attacks only), but with a +2 to-hit modifier to reflect the clumsiness created by I-TSM.

Conversion: Industrial TSM

INFANTRY TRANSPORT (IT#)

The numerical rating associated with this ability indicates the number of tons of transport space available. The Element may carry any number of infantry or battle armor Elements as long as these Elements' total cargo requirement does not exceed the transporting Element's infantry transport rating.

Conversion: Infantry transport bay. Record this ability as ITx, where x is the total carrying capacity (in tons) devoted to

infantry—including battle armor—transport bays. Do not record doors for infantry transport bays.

KEARNY-FUCHIDA DRIVE (KF)

An Element with this special ability can make a hyperspace jump up to thirty light-years.

Conversion: Any K-F drive

LARGE (LG)

The Element is considered Large for stacking purposes (see *Stacking*, p. 219). It fully occupies one *BattleForce* hex.

Conversion: Support Element type (Size Class 3), Small Craft (any size), DropShips (any size)

LEADER (LEAD)

Elements occupying command positions in the Chain of Command receive this special ability. As a reflection of their battlefield acumen, Elements with this ability generate Command Points equal to their tier of command (see *Command Phase*, p. 265).

Conversion: Based on position in the chain of command.

LIGHT ACTIVE PROBE (LPRB)

Light Active Probes function identically to standard Active Probes, but with reduced range (see *Blip Counters*, p. 260).

Conversion: Light Active Probe

LIGHT ECM (LECM)

Light ECM functions identically to ECM, but with a reduced radius. Light ECM only creates an ECM bubble in the Element's hex. It does not create a bubble in any adjacent hexes.

Conversion: Battle armor ECM

LIGHT TAG (LTAG)

An Element with Light Tag can paint targets for homing missiles (see *Homing Missiles*, p. 286). Light Tag works at short range only.

Conversion: Light TAG

LITHIUM-FUSION (LF)

Lithium-fusion batteries can be used to store the charge for a hyperspace jump. Ships so equipped can immediately make a second jump after completing one. Command Points must still be spent for the second jump.

Conversion: Lithium-Fusion Batteries

LONG RANGE MISSILES (LRM X/X/X/X)

This ability tracks an Element's standard LRM damage if it can do 10 or more points of damage. It is added to all attacks except Indirect Fire and turrets, though an Element may have LRM damage as part of a turret profile and some Elements may have an LRM damage value as part of their firing arcs. Additionally, a player may use specialty ammo (see *Alternate Munitions,* p. 308).

Conversion: Standard LRM or MML launchers that can do a total of 10 or more points of damage at medium range. Record this ability as LRM X/X/X/X where X is the damage value for each range bracket (see p. 359 for more info).

MAGLEV (MAG)

A variation of the Rail special ability, Elements with maglev are limited in their ability to travel. Elements with maglev may only enter hexes with maglev rails.

Conversion: Rail (Maglev) chassis modification

'MECH TRANSPORT (MT#)

An Element with this special ability can transport the indicated number of 'Mechs. This ability usually applies to DropShips, and is always used in conjunction with the Door special ability (see *Transporting Elements*, p. 324).

Conversion: 'Mech transport bay. Record this ability as MTxDy where x is the number of 'Mech bays mounted on the Element and y is the number of 'Mech bay doors available to the bay (see *Door*, p. 348).

MECHANIZED (MEC)

A battle armor Element with this special ability may be transported using the Mechanized Battle Armor rules (see p. 324).

Conversion: Bipedal battle armor weight classes PAL or Light, plus 2 armored gloves, 2 basic manipulators or 1 battle claw; or Medium or Heavy weight plus 2 basic manipulators or 1 battle claw.

MELEE (MEL)

This special ability indicates a 'Mech is equipped with a physical attack weapon and does 1 additional point of physical attack damage (see *Physical Attacks*, p. 232). Multiple weapons are not cumulative.

Conversion: The 'Mech must have one or more of the following (though having multiple physical attack weapons does not grant an additional bonus): Backhoe, Chain Whip, Chainsaw, Claws, Combine, Dual Saw, Flail, Hatchet, Heavy Duty Pile Driver, Lance, Mace, Mining Drill, Retractable Blade, Rock Cutter, Shield, Spikes, Spot Welder, Sword, Talons, Vibroblade (any) or Wrecking Ball.

MIMETIC ARMOR SYSTEM (MAS/LMAS)

This ability functions similarly to the Stealth special ability. Weapon attacks against an Element with this ability add a to-hit modifier based on how far the Element moved in the current turn's Ground Movement Phase. For 'Mechs: zero hexes moved adds a +3 to-hit modifier; 1-2 hexes moved adds a +2 to-hit modifier; for 3-5 hexes moved, add a +1 to-hit modifier. If the Element moved more than 6 hexes, do not apply a modifier. For battle armor: +3 for zero hexes moved, +2 for 1 hex moved, +1 for 2 hexes moved and no modifier for 3 or more hexes moved.

Conversion: For 'Mechs, Void-Signature System; for battle armor, Mimetic Armor. Battle armor camo systems are considered "Light" MAS; +2 for zero hexes moved, +1 for 1 hex moved.

MINE DISPENSER (MDS#)

This ability allows an Element to create minefields in hexes through which it travels (see *Minefields*, p. 287). Record this ability as MDS# where # is the number of mine dispensers mounted on the Element. Each mine dispenser deploys a density 1 minefield. Multiple deployments in the same hex increase the density of the minefield to a max of 5.

Conversion: Mine Dispenser equipment

MINESWEEPER (MSW)

An Element with a minesweeper automatically clears any minefields in the hex it occupies at the end of the Movement Phase (see *Minefields*, p. 287). During the turn it clears a minefield, an Element may take no actions aside from expending MV.

Conversion: Minesweeper equipment or Battle Armor Mine Clearance equipment

MISSILE (MSL)

Elements with this special ability have been outfitted with Capital and Sub-Capital scale missile launchers. Point Defense Weapons may reduce damage from these weapons.

Conversion: Any capital missile or sub-capital missile launcher. When converting AR-10s to *BattleForce*, assume the AR-10 always fires the most powerful missile available to it.

MOBILE ARMY SURGICAL HOSPITAL (MASH#)

An Element with MASH can be used to "repair" damage to infantry and battle armor Elements. A MASH Unit automatically includes one operating theatre. Additional theatres may be added (see p. 228, *TM*). Additionally, every full ton of Paramedic Equipment (see p. 233, *TM*) also counts as one additional theatre if the Element already has a MASH core Unit. MASH has no effect in standard or advanced play, but will be detailed in *Interstellar Operations*.

Conversion: MASH Core Unit. Record this ability as MASH# where # is the total number of operating theatres. Omit the # if one or less.

MOBILE FIELD BASE (MFB)

A mobile field base is a special salvage Unit that provides bonuses on repair rolls. MFB has no effect in standard or advanced play, but will be detailed in Interstellar Operations.

Conversion: Mobile Field Base or repair bay

MOBILE HEADQUARTERS (MHQ#)

The standard MHQ is equipped with a wide array of special equipment to coordinate engagements over a large area. This ability provides different bonuses depending on the numerical rating (see *Battlefield Intelligence*, p. 263).

Conversion: Record the ability as MHQ# where # is the number of full tons (round fractions down) of Command, Control or Communications equipment mounted by the Element. The Mobile Headquarters Table at top right summarizes the type and tonnage of all valid equipment.

NARC MISSILE BEACON (S/CNARC#)

An Element with this special ability may make an extra attack with its Narc beacon. Any Element hit by a Narc beacon takes 1 additional point of damage from any Indirect Fire (IF), LRM, or SRM attacks for the rest of the game--unless the Element is within an ECM bubble. Standard (IS and Clan) Narc beacon launchers have a maximum range of Medium. Compact (IS and Clan) Narc beacon launchers have a maximum range of Short. Instead of their normal attack, Narc launchers may fire specialty ammo (see p. 308).

Conversion: Narc Beacon launcher of any type. Record the ability as SNARC for standard launchers and CNARC for compact launchers. If an Element has multiple Narc Beacon launchers append the number of launchers. An Element may make a number of additional Narc attacks equal to this number each turn.

NAVAL C^3 (NC3)

A Naval C^3 system functions like a C^3 master computer (see p. 347) with a maximum range of 20 *BattleForce* space hexes. Up to 6 Elements may participate in a Naval C^3 network.

Standard Rules: All linked Elements receive a –1 to-hit modifier on their attacks. The Naval C^3 network is not affected by ECM of any kind.

Advanced Rules: This system functions like a C^3I system with respect to range modifiers for weapon attacks.

Conversion: Aerospace Element type and Naval C^3.

MOBILE HEADQUARTERS TABLE

Item	Tonnage
C^3 Boosted System Master	6
C^3 Master Computer	5
C^{3i} Computer	2.5
Cockpit Command Console	1
Communications Equipment	*

*As listed in an Element's Technical Readout entry

OFF-ROAD (ORO)

Support Elements that do not have the Off-Road Chassis and Controls modifications pay 1 additional MP for every non-paved hex they traverse, which can drastically impede a Unit's mobility. Elements with the Off-Road ability pay no extra MP when moving through non-paved hexes.

Conversion: Support Vehicle Element type with the Off-Road chassis and controls modification

OMNI (OMNI)

An Omni Element (vehicle or 'Mech) may transport a single battle armor Element using the Mechanized Battle Armor rules (see p. 324).

Conversion: Omni chassis type

POINT DEFENSE (PNT#)

Unless it is shut down, an Element protected by a point defense system automatically engages any missiles that attack it. Unlike an AMS, the point defense system may also engage Arrow IV, Capital or Sub-Capital missiles. The system is always successful, i.e. a to-hit roll is not necessary. The system generates a number of points of damage equal to its numerical rating. Thus an Element with PNT6 would generate 6 points of damage. This damage is allocated among incoming missiles at the discretion of the controlling player.

For each point of damage inflicted against Arrow IV, Capital or Sub-Capital missiles in this fashion add a +1 modifier for the missile's to-hit roll. If a missile takes damage equal to it's damage value it is destroyed. For each point of damage inflicted against any other type of missile multiply its damage value by 0.50 and round down to; if the type of missile does not do damage, it is eliminated. If two points of damage are assigned to any other type of missile attack, the missile attack is eliminated. Point defense weapons cover a 360 degree arc, protecting every hexside of an Element with this ability.

Conversion: An Aerospace Element must mount one of the following weapons to receive the Point Defense ability: Inner Sphere: Anti-Missile System, ER Small Laser, Heavy Machine Gun, Laser Anti-Missile System, Light Machine Gun, Machine Gun, Small Laser, Small Pulse Laser, or Small X-Pulse Laser Clan: ER Micro Laser, ER Small Laser, Heavy Machine Gun, Heavy Small Laser, Improved Heavy Small Laser, Light

Machine Gun, Machine Gun, Micro Pulse Laser, Small Chemical Laser, or Small Pulse Laser.

To determine the numerical rating for a point defense system, total the short range damage value for any of these weapons mounted on the Element, then divide by 10 and round up to the next whole number.

> *Alice is calculating the Point Defense rating for her* Vandal-B *aerospace fighter. It has a total of 6 ER Small Lasers: 2 in the nose, and 2 in each wing. Each ER Small Laser does 5 points of damage, giving her a total damage of 30 points. Alice divides this total by 10 and rounds up to the next whole number giving her a PNT rating of 3.*

PROTOMECH TRANSPORT (PT#)

An Element with this special ability can transport the indicated number of ProtoMechs. This ability usually applies to DropShips, and is always used in conjunction with the Door special ability (see *Transporting Elements*, p. 324).

Conversion: ProtoMech transport bay. Record this ability as PTxDy where x is the number of ProtoMechs carried in the ProtoMech transport bay and y is the number of ProtoMech bay doors available (see *Door*, p. 348).

RAIL (RAIL)

An Element with the Rail chassis modification can only move in rail hexes.

Conversion: Rail chassis type

RECON (RCN)

The recon ability works in conjunction with the Mobile Headquarters (MHQ#) ability (see *Battlefield Intelligence*, p. 263).

Conversion: Active Probe, Light Active Probe, ≥5 percent of total tonnage devoted to communication equipment, or one or more of the following: Lookdown Radar, Remote Sensor Dispenser, Recon Camera, High-Res Image Camera, Hyperspectral Imager, Infrared Imager Camera or additional Sensors (as weapons and equipment, not a built-in sensor package).

REMOTE SENSORS DISPENSER (RSD#)

An Element with this ability may deploy 1 remote sensor per turn per Remote Sensor Dispenser. When deployed sensors are stationary and rest on the surface of the underlying terrain. The sensors are automatically destroyed when any opposing Element enters their hex, and during the End Phase of the turn if they are deployed into a hex containing an opposing hidden Element. Alternatively, the sensor may be destroyed if it takes 1 point of damage. Attacks against a sensor apply a -2 to-hit modifier. Each type of sensor may also be carried as a bomb (taking 1 bomb slot) by any Element capable of carrying bombs. Once deployed, remote sensors may be used to spot for indirect or artillery attacks, as if they were a friendly Element, but they apply an additional +3 to-hit modifier. At the end of the Movement Phase, remote sensors reveal blip counters within 10 hexes if the blip counter is within LOS, and blip counters within 5 hexes (regardless of LOS) unless all the Elements represented by the blip counter have Stealth (STL) or at least one Element in the hex has any type of ECM. Additionally, remote sensors reveal hidden Elements in their hex automatically unless the Elements have the Stealth (STL) or Mimetic Armor System (MAS) abilities.

Conversion: Remote Sensor Dispenser. Record this ability as RSD# where # is the number of Remote Sensor Dispensers mounted on the Element.

SAW (SAW)

An Element with this special ability may forego its attack to clear woods hexes (see *Terrain Conversion*, p. 323).

Conversion: Chainsaw**,** Dual Saw or Retractable Blade

SCREEN (SCR#)

An Element with a screen launcher may deploy screen clouds (see *Screens*, p. 292).

Conversion: Record this ability as SCRX, where X is the number of screen launchers mounted on the Element.

SEARCHLIGHT (SRCH)

Elements equipped with a searchlight ignore the to-hit modifiers for combat in darkness (see *Darkness*, p. 315).

Conversion: 'Mechs and Combat Vehicles automatically get this ability. All other Elements must have at least one mounted searchlight.

SHORT RANGE MISSILES (SRM X/X/X/X)

This ability tracks an Element's standard SRM damage if it can do 10 or more points of damage. It is added to all attacks except Indirect Fire and turrets, though an Element may have SRM damage as part of a turret profile and some Elements may have an SRM damage value as part of their firing arcs. Additionally, a player may use specialty ammo (see *Alternate Munitions,* p. 308).

Conversion: Standard SRM or MML launchers that can do a total of 10 or more points of damage at medium range. Record this ability as LRM X/X/X/X where X is the damage value for each range bracket (see p. 359 for more info).

SMALL CRAFT TRANSPORT (ST#)

An Element with this special ability can transport the indicated number of Small Craft. This ability usually applies to DropShips, and is always used in conjunction with the Door special ability (see *Transporting Elements*, p. 324).

Conversion: Small Craft transport bay. Record this ability as STxDy, where x is the number of Small Craft transport bays and y is the number of Small Craft bay doors available (see *Door*, p. 348).

SPACE DEFENSE SYSTEM (SDS)

Any non-DropShip Element or installation incapable of spaceflight that mounts capital weapons receives this ability. Combine all Capital weapons (by type, i.e. Capital, Capital Missile, and Sub-Capital) into their own attacks for this Element. List each SDS system separately and append C for Capital, CM for Capital Missile, and SC for Sub Capital to the SDS designation. SDS systems are always treated as a separate attack for any Element that mounts them.

Conversion: Capital (or Sub-Capital) weapons on an Element or installation not capable of spaceflight.

SPACE OPS ADAPTATION (SOA)

An Element with this special ability can operate in vacuum, but is not capable of spaceflight on its own.

Conversion: Battle armor space operations adaptation. BattleMechs, OmniMechs, and ProtoMechs automatically get this ability.

IndustrialMechs may get this ability if they have both Environmental Sealing and a Fusion, Fission, or Fuel Cell engine.

SPACEFLIGHT (SPC)

An Element with this special ability can leave the atmosphere of a planet and move to the space map.

Conversion: Aerospace fighter, DropShip or aerospace Small Craft chassis

STEALTH (STL)

Though various stealth systems exist in *BattleTech*, the majority are similar enough in function that *BattleForce* does not distinguish between them. These systems make a target more difficult to hit. For non-infantry targets, apply an additional +1 modifier (for a total of +3) when making medium-range attacks against an Element with this ability. Apply an additional +2 (for a total of +6) when making long-range attacks, and an additional +2 (for a total of +8) for extreme-range attacks.

A non-infantry Element with this special ability also has the ECM (ECM) special ability. A battle armor Element with this special ability receives the Light ECM (LECM) special ability. Battle armor Elements with the Stealth special ability receive an additional to-hit modifier of +1 at short range, and the same modifiers at medium, long and extreme range as non-infantry targets.

Conversion: Stealth Armor, Chameleon Light Polarization Shield or Null-Signature System ('Mechs); Basic Stealth, Improved Stealth, Prototype Stealth or Standard Stealth Armor (battle armor); Vehicle Stealth Armor (vehicles)

SUB-CAPITAL (SCAP)

Thought not quite as powerful as Capital weapons, Sub-Capital weapons pack significantly more punch than their standard analogues. Sub-Capital weapons have the same range brackets as capital weapons. An Element with Sub-Capital weapons may make a separate attack with these weapons.

Conversion: Any Sub-Capital weapon, except Sub-Capital Missiles.

SUPER LARGE (SLG)

An Element with this ability fully occupies three or more *BattleForce* hexes. Treat each hex as if it were occupied by a Large Element (see *Stacking,* p. 219).

Conversion: Support Element (Size Class 5) or Mobile Structure

TARGET ACQUISITION GEAR (TAG)

TAG is used to designate targets for homing artillery attacks. An Element with this ability may designate targets at short and medium ranges (see *Artillery*, page 285).

Conversion: TAG or C^3 Master Computer

TASER (M/BTAS#)

Record this as M/BTAS# where M indicates a 'Mech taser, B indicates a battle armor taser, and # is the number of tasers mounted on the 'Mech or battle armor.

In addition to any normal attacks allowed the 'Mech each turn, it may make that number of taser attacks divided among any number of targets within firing arc and short range. Battle armor Elements with tasers may make that number of attacks per game; i.e. a squad of battle armor with 4 tasers could make 4 taser attacks per game, while a 'Mech equipped with 2 tasers could make 2 taser attacks every turn. The effects of a successful taser attack are modified from *Tactical Operations* (see p. 347, *TO*) as follows: the attack causes no damage and the duration of the effect (whether shutdown or interference) is always 1 turn.

Conversion: 'Mech or battle armor taser

TELEOPERATED MISSILES (TELE)

An Element with this ability may treat any or all of its capital missiles as teleoperated capital missiles and may make either standard or teleoperated attacks.

Conversion: Teleoperated capital missile launchers

TORPEDO (TOR)

Torpedo launchers may only be launched by Elements in water, and the target must be an Element in a water hex. Hovercraft and airborne WiGEs operating on the surface of a water hex are valid targets for torpedo attacks.

If the Element is a 'Mech, Combat Vehicle or Small or Medium Support Element, combine all torpedo weapons on the Element into a single torpedo attack with short, medium, long and extreme ranges. If the Element is a Large, Very Large or Super Large Support Element, calculate a separate torpedo attack for each arc (if applicable). All torpedo attacks are in addition to any other attacks normally permitted for an Element. Torpedo attacks do full damage underwater.

Conversion: Any torpedo missile rack. Torpedo racks have the same range and damage profiles as their missile counterparts.

TRIPLE STRENGTH MYOMER (TSM)

Elements with the Triple Strength Myomer special ability move faster and do additional damage when running hot. When at 1 on the heat scale, the Element gains 1 MP instead of losing 1 MP. All other normal effects for being at 1 on the heat scale apply. The Element also does 1 additional point of physical attack damage (standard and melee physical attacks only). When at 2 or higher on the heat scale, all normal rules apply, but the Element retains its additional MP and physical attack bonus. BattleMechs, OmniMechs, and ProtoMechs automatically get this ability. IndustrialMechs may get this ability if they have both Environmental Sealing and a Fusion, Fission, or Fuel Cell engine.

The effects of TSM are cumulative with the Melee (MEL) special ability, so an Element with both abilities can inflict a total of +2 damage when making a melee attack with active TSM.

Conversion: Triple Strength Myomer

TURRET (TUR)

An Element with a turret has some weapons with a 360-degree field of fire. Damage for all turret-mounted weapons is calculated separately from other attacks. If a turret includes indirect fire weapons, calculate an indirect fire attack for the turret. If an Element has multiple turrets, calculate each separately, unless the Element is a Mobile Structure. Each turret can make either a standard attack or an indirect attack, but not both in the same turn.

Mobile Structures combine multiple turrets from their 3-hex regions into single turrets. Each of these "single" turrets gives the Element an additional attack with a 360-degree arc. As with standard turrets, calculate an indirect fire attack if applicable (see *Mobile Structures*, p. 270).

Conversion: One or more turrets, including 'Mech turrets

UNDERWATER MANEUVERING UNIT (UMU)

An Element with the UMU special ability uses the Submarine movement rules for underwater movement, instead of the normal underwater movement rules (see p. 219).

Conversion: Battle armor or 'Mech UMU

VARIABLE RANGE TARGETING (VRT)

Elements equipped with Variable Range Targeting may switch between short-range, long-range or standard targeting during the End Phase of any turn (see *Targeting and Tracking Systems*, page 323).

Conversion: Variable Range Targeting system

VEHICLE TRANSPORT (VTX#)

Vehicles differ from other Elements in that the type of bay necessary for transport differs by vehicle weight. The Vehicle Transport special ability indicates which type of vehicle a given bay can accommodate: Medium, Heavy or Super-Heavy (M/H/S; see *Transporting Elements*, p. 324).

Conversion: Combat or Support Vehicle Element type. Vehicles up to 59 tons get VTM. Vehicles between 60 and 100 tons get VTH, and vehicles between 101 tons and 200 tons get VTS. Record this ability as VTxyDz, where x is the type of vehicle bay, y is the number of vehicle bays mounted on the Element and z is the number of doors available (see *Door*, p. 348).

VERY LARGE (VLG)

An Element with this ability fully occupies two *BattleForce* hexes. Treat each hex as if it were occupied by a Large Element (see *Stacking,* p. 219).

Conversion: Support Element type (Size Class 4)

VSTOL (VSTOL)

This ability allows an Element to lift off and land in a shorter amount of space than regular aerodyne Units (see *Liftoff, Landing and Ground Movement*, p. 223).

Conversion: VSTOL chassis and controls modification or aerospace Element with aerodyne movement mode.

WATCHDOG (WAT)

A combination of PRB and ECM, this special ability gives an Element the capabilities of both systems, but with diminished range and effect. Treat an Element with this special ability as having both the LPRB and LECM special abilities.

Conversion: Watchdog Composite Electronic Warfare System

CONVERTING NEW RULES

While it is not possible to cover every potential advanced rule that may be found in *BattleTech* standard and advanced play, the following guidelines allow players to convert some rules for use in *BattleForce* that fall outside other standard and advanced *BattleForce* rules.

CONVERTING NEW MOVEMENT MODES

Use the Walking/Cruising/Safe Thrust rating for *BattleForce* MV.

Disregard any movement modes that rely on variable mechanics. For example, if a movement mode provides multiple options based on a die roll, it is not suitable for *BattleForce*.

Regardless of the modifiers incurred, ignore any Piloting Skill rolls required as part of a movement mode.

If the new movement mode generates or negates heat, translate this to *BattleForce* heat as 1 point of *BattleForce* heat per 7 points (or fraction thereof) of *BattleTech* heat.

If the movement mode has particular requirements (such as a specific component), these requirements should be met in *BattleForce* providing there is a mechanism to track them. For example, a rule that requires enhanced imaging to run backwards at night would not be appropriate in *BattleForce*, as no mechanism exists that tracks whether or not an Element has enhanced imaging.

CONVERTING NEW TERRAIN TYPES

Disregard any random terrain effects (such as chances to bog down, break through ice, explode and so on).

Use the most restrictive to-hit modifier applicable. For example, if a terrain type imposes a +1 modifier on one type of attack and a +2 modifier on another type, use +2 for *BattleForce*.

Give the terrain 1 point of Heat ability for every 7 points of heat (or fraction thereof) it generates to a maximum of HT2.

Give the terrain –1 point of Heat ability for every 7 points of heat (or fraction thereof) it dissipates to a maximum of HT – 2.

Use the prohibited Unit types specified in the *BattleTech* rules.

If the terrain causes damage to any type of Unit (other than infantry), divide this damage (or the average damage, if the damage is random) by 10 and round up to a maximum of 3 points of damage. If the terrain only damages infantry Units, ignore this effect.

Ignore all Piloting/Driving Skill roll effects.

PILOTING AND GUNNERY TO SKILL CONVERSION TABLE

Total of Piloting and Gunnery	BattleForce Skill Rating
0-1	0
2-3	1
4-5	2
6-7	3
8-9	4
10-11	5
12-13	6
14+	7

CONVERTING TOTAL WARFARE PILOTING AND GUNNERY SKILLS

To convert *Total Warfare* Piloting and Gunnery skills to *BattleForce* Skill Ratings, add the Piloting and Gunnery Skill ratings and consult the conversion table on page 354.

CONVERTING BT ELEMENTS TO BATTLEFORCE

BattleForce statistics for each 'Mech, ProtoMech, vehicle, infantry and aerospace Element are derived from their *BattleTech* statistics. The following rules explain how to convert published *BattleTech* Units (or those players have created themselves) into *BattleForce* statistics.

CONVERSION PROCESS

Converting a *BattleTech* Unit to a *BattleForce* Element follows an eleven-step process as outlined below.

1. Determine Element composition
2. Determine weight/size class
3. Convert Movement Points and movement modes
4. Convert armor
5. Convert structure
6. Convert weapons
7. Convert heat
8. Determine final Damage Value
9. Calculate Overheat Value ('Mechs and aerospace fighters only)
10. Convert special equipment to special abilities
11. Determine base Point Value

DETERMINE ELEMENT COMPOSITION

'Mechs, aerospace Elements, Combat and Support Vehicles, and Mobile Structures are all converted from individual *BattleTech* Units to *BattleForce* Elements. Battle armor Units are converted by squad or Point as appropriate to the faction. ProtoMechs are converted by Point. Conventional infantry are converted by platoon or its equivalent.

DETERMINE WEIGHT/SIZE CLASS

Refer to the Weight/Size Class Table (p. 356) to determine the weight/size class of an individual Element. 'Mechs, aerospace and conventional fighters, and Combat Vehicles have a weight class depending on their tonnage. Infantry, battle armor and ProtoMech Elements are always Weight Class 1 (or Light) in *BattleForce*. Support Vehicles and non-fighter aerospace Elements have a size class based on their weight or chassis. For Large Naval Vessels and Airships, record the template type in addition to the size class (see Large Element Templates, below). Mobile structures record their hex pattern. Mobile Structures are always Size Class 5, and must also record their height (2+ the highest level of the structure).

Large Element Templates

Size Class 3 and larger Support Elements use a template in *BattleForce* (as shown in the Large, Very Large and Super Large Support Vehicle Firing Arc diagrams; see p. 288). The Template Conversion Table (see p. 356) shows how to convert a *Total Warfare*-style template to a *BattleForce* template.

MOVEMENT MODE TABLE

Movement Mode	BF Movement Code
Aerodyne	a
Airship	i
Foot	f*
Hover	h**
Jumping	j
Motorized	m‡
Naval	n
Rail	r
Station-Keeping	k
Spheroid	p
Submersible	s
Tracked	t**
UMU	u
VTOL	v§
Wheeled	w(b/m)†**
WiGE	g

*Conventional infantry only
**Vehicles and mechanized conventional infantry
†Bicycle or Monocycle Chassis and Controls modification
‡Motorized conventional infantry only
§Vehicles and battle armor

CONVERT MOVEMENT POINTS (MP) AND MOVEMENT MODES

In *BattleForce*, an Element's MP is equal to its *BattleTech* Walking or Cruising MP, or Safe Thrust rating. Aerospace Elements (including conventional Fixed-Wing Support Vehicles and Airships) use Thrust Points (TP) instead. Consult the Movement Mode Table above for the code corresponding to an Element's movement type and record this along with the Element's MP. Refer to the notes under Battle Armor, Jumping, Mobile Structures, Rail, UMU and VTOL for additional conversion rules.

Battle Armor

These Elements use the fastest movement mode available to them as their *BattleForce* MV. If the Element has a DWP, record its base MV first followed by a slash and then its MV without the DWP. For example a Point with a ground speed of 1 MP, a Jumping MP of 3, and a DWP, would be: 1/3j.

Jumping

If an Element has Jumping MP at least equal to its Walking MP, its movement in *BattleForce* is considered Jumping (marked with a j on the record sheet).

If the Element's normal Jumping MP is less than the Walking MP, multiply its Jumping MP by .66 and round normally. If this result is at least 1, record ground MP as normal, and then add a slash and the Jumping MP followed by a j (for example, 5/3j).

WEIGHT/SIZE CLASS TABLE

SUPPORT/TRANSPORT ELEMENTS, AND SATELLITES

BattleForce Size Class	Corresponding Weight (in tons)	Size Value
Small		
All Types	0.100-4.999	1
Medium		
Airships	5-300	2
Fixed-Wing	5-100	2
Hover	5-50	2
Naval	5-300	2
Rail†	5-300	2
Satellite	5-100	2
Tracked	5-100	2
VTOL	5-30	2
Wheeled	5-80	2
WiGE	5-80	2
Large		
Airship‡	300.5-600 (A)	3
Fixed-Wing	100.5-200	3
Hover	50.5-100	3
Naval‡	300.5-6,000 (A)	3
Rail†	300.5-600	3
Satellite	100.5-200	3
Tracked	100.5-200	3
VTOL	30.6-60	3
Wheeled	80.5-160	3
WiGE	80.5-240	3
Very Large		
Airship‡	600.5-900 (B)	4
Naval‡	6,000.5-30,000 (B)	4
Super Large		
Airship‡	900.5-1,000 (C)	5
Naval‡	30,000.5-100,000 (C)	5

COMBAT ELEMENTS

Element's Total Warfare Weight Class	Corresponding Weight (in tons)††	Size Value
Light*	1-39 (5-45)	1
Medium	40-59 (50-70)	2
Heavy	60-79 (75+)	3
Assault**	80+	4

DROPSHIPS AND SMALL CRAFT

Element's Total Warfare Size Class	Corresponding Weight (in tons)	Size Value
Small	1-2,499	1
Medium	2,500-9,999	2
Large	10,000-100,000	3

JUMPSHIPS AND SPACE STATIONS

BattleForce Size Class	Corresponding Weight (in tons)	Size Value
Small	1-99,999	1
Medium	100,000-299,999	2
Large	300,000+	3

WARSHIPS

BattleForce Size Class	Corresponding Weight (in tons)	Size Value
Small	1-499,999	1
Medium	500,000-799,999	2
Large	800,000-1,199,999	3
Very Large	1,200,000+	4

*Includes infantry (conventional and battle armor) and ProtoMechs.
**Includes any Combat Vehicle over 80 tons in mass, regardless of battlefield role.
†Rail Units occupy 1 BattleForce hex per 10 points of size value (they are an exception to the stacking rules for large Elements).
‡The letters in parentheses indicate the appropriate BattleForce template for Elements this size.
††The numbers in parenthesis are for aerospace and conventional fighters.

TEMPLATE CONVERSION TABLE

Total Warfare Template	BattleForce Template
A	A
B	A
C	B
D	B
E	C

If the Jumping MP is greater than the Walking MP (from Improved Jump Jets, a Partial Wing or other jumping enhancement system), record ground MP as normal, and then add a slash and the best-case Jumping MP followed by a J (for example, 5/8J)

If an Element is comprised of multiple *BattleTech* Units—for example, a ProtoMech Point—then all Units must jump for the *BattleForce* Element to gain the Jumping movement mode. In addition, the Element will have Jumping MP equal to that of its slowest jumping member.

Battle armor Elements use the greater of their Ground or Jumping MP when determining *BattleForce* MP.

Treat an Element with mechanical jump boosters as if it had jump jets for conversion purposes.

MASC and Superchargers

MASC and superchargers affect the MP available to an Element when it is converted from *BattleTech* to *BattleForce* stats. Multiply an Element's *BattleForce* MP Value by 1.25 and round normally to the nearest whole number if the Element has either system. If the Element has both systems, multiply the Element's MP by 1.5 and round normally to the nearest whole number.

Mobile Structures

These Elements use their maximum MP value for their *BattleForce* MV.

Permanent Movement Penalties

If an Element has an MP penalty (such as from Hardened or Modular Armor), use the modified MP when converting to *BattleForce*. For example, the *Great Turtle* should have a Walking MP of 3 based on its weight and engine size, but thanks to its Hardened Armor it has a Walking MP of 2. It therefore has an MV of 2 in *BattleForce*

Rail

Rail Elements use their Cruising MP, along with their acceleration rate, for their *BattleForce* MV. Record the Cruising MP and then add a slash (/). Add the acceleration rate (2 for Small and Medium Elements, 1 for Large) after the slash and append an **R** to indicate rail movement: for example,12/2R. If the Element has any large cars, the entire Element is treated as Large for its acceleration rate.

Station-Keeping Drives

For each 0.10 G the station-keeping drives can generate, the Element gets 0.2 TP in *BattleForce* (see *Space Movement Basics*, p. 224).

UMU

For Elements outfitted with UMUs, the MP is displayed as two values. The first is the Ground MP followed by the UMU MP, separated by a slash (/). An **s** is appended to this second value to denote submersible movement.

VTOL

Battle armor Elements use their *BattleTech* VTOL MP (if applicable) as *BattleForce* MP.

CONVERTING ARMOR

Calculate *BattleForce* armor based on the total amount of *BattleTech* armor mounted by a given Element. If the Element is comprised of multiple *BattleTech* Units—for example, a battle armor Point—then total the armor of all Units and convert that total to *BattleForce* armor. Divide the total *BattleTech* armor by 30 and round normally to determine an Element's *BattleForce* armor.

For convenience, the Armor Conversion Table (at right) shows *BattleForce* Armor Values for *BattleTech* armor totals up to 1,004. To find the Element's *BattleForce* Armor Value, first find its total *BattleTech* Armor Factor in the left-hand column on the Armor Conversion Table (below). The equivalent *BattleForce* Armor Value appears in the right-hand column. Refer to the notes under various armor and Element types (below) for additional conversion rules.

Aerospace Elements

These Elements have a Damage Threshold equal to 10 percent of their *BattleForce* Armor Value (rounded up).

Any time a single hit to an aerospace Element does more damage than the Damage Threshold, roll on the Determining Critical Hits Table. For example, a *Nekohono'o* DropShip has an Armor Value of 32; divided by 10, this equals 3.2, which rounds up to 4. If a single hit does 5 or more points of damage, roll on the Determining Critical Hits Table. If the structure is also damaged by the attack, roll twice.

Battle Armor

Do not count the 1 point of "armor" representing the soldier inside the battlesuit when calculating armor for battle armor Elements.

Commercial or BAR 1–9 Armor

For Elements with Commercial Armor, divide the *BattleTech* Armor Rating by 2 and round normally. Use this modified Armor Rating when consulting the Armor Conversion Table (see below).

For other Elements with a Barrier Armor Rating of less than 10, first divide their *BattleTech* Armor Factor by 10, then multiply the result by their BAR rating. Use this modified Armor Factor when consulting the Armor Conversion Table (see below).

Capital Armor

Multiply the total Capital Armor by 0.33 and round normally to determine an Element's *BattleForce* Armor Value. Do not consult the Armor Conversion Table. The value calculated by multiplication is the final Armor Value.

ARMOR CONVERSION TABLE

BT Armor Value	BF Armor Value	BT Armor Value	BF Armor Value
0-14	0	495-524	17
15-44	1	525-554	18
45-74	2	555-584	19
75-104	3	585-614	20
105-134	4	615-644	21
135-164	5	645-674	22
165-194	6	675-704	23
195-224	7	705-734	24
225-254	8	735-764	25
255-284	9	765-794	26
285-314	10	795-824	27
315-344	11	825-854	28
345-374	12	855-884	29
375-404	13	885-914	30
405-434	14	915-944	31
435-464	15	945-974	32
465-494	16	975-1004	33

Beast Infantry
Calculate armor as Conventional Infantry, but include the damage required to kill each beast in the Element prior to dividing by 15.

Conventional Infantry
Conventional infantry Elements have an Armor Value equal to the total number of troopers in the Element divided by 15, rounded up to the nearest number.

Ferro-Lamellor Armor
Multiply the total armor value by 1.20 and round up. Then compare this number to the Armor Conversion Table, or divide it by 30 and round normally to determine an Element's *BattleForce* Armor Value.

Hardened Armor
Multiply the total Armor Value by 1.50 and round up. Then compare this number to the Armor Conversion Table, or divide it by 30 and round normally to determine an Element's *BattleForce* Armor Value.

Mobile Structures
As each hex of a Mobile Structure represents 3 hexes in *Total Warfare*-scale hexes, divide the structure into 3-hex regions, with any leftover hexes forming their own one- or two-hex region. These regions are fixed for the duration of the conversion process and game play. Total the armor for each region, then compare this number to the Armor Conversion Table or divide it by 30 and round normally to determine the *BattleForce* Armor Value per hex.

Modular Armor
Add the total points of Modular Armor and any other armor mounted on the Element. Then compare this number to the Armor Conversion Table, or divide it by 30 and round normally to determine an Element's *BattleForce* Armor Value.

Patchwork Armor
Convert each type of armor individually and total the converted values to find the Armor Value for the Element.

Reflective (Glazed) and Reactive (Blazer) Armor
Multiply the total Armor Value by 0.75 and round up. Then compare this number to the Armor Conversion Table, or divide it by 30 and round normally to determine an Element's *BattleForce* Armor Value.

CONVERTING STRUCTURE

Calculating *BattleForce* structure varies according to Element type. The following paragraphs describe the process for each.

Aerospace Elements
An aerospace Element's Structure Value depends on the type of Element.

- **Aerospace/Conventional Fighters, DropShips and Small Craft:** Multiply SI by 0.50 and round up to the next whole number.
- **Airships:** Multiply SI by 0.50 and round up to the next whole number.
- **Fixed-Wing Support Vehicles:** Multiply SI by 0.50 and round up to the next whole number.
- **JumpShips, Satellites and Space Stations:** All have a Structure Value of 1.
- **WarShips:** Multiply its Structural Integrity by 0.66 and round up to the next whole number.

Battle Armor
All battle armor Elements receive a Structure Value of 2.

Conventional Infantry
Conventional infantry Elements receive a Structure Value of 1.

'Mechs
The Structure Value is based on the 'Mech's tonnage and the type of engine it carries. Because larger engines make a 'Mech more vulnerable to critical damage and destruction, 'Mechs carrying such engines have a lower Structure Value than other 'Mechs. To find a 'Mech's Structure Value, consult the 'Mech Structure Conversion Table (see p. 359) and read across the table from the 'Mech's engine type to the appropriate tonnage column.

Mobile Structures
Total the CF from each region of the Mobile Structure. Then compare this number to the Armor Conversion Table, or divide it by 30 and round up to the next whole number to determine the *BattleForce* Structure Value per region.
These Elements also have a Damage Threshold equal to 10 percent of their *BattleForce* Structure Value (rounded up). Mobile Structures do not automatically take critical hits from structure damage; instead, any time a single hit to a Mobile Structure does more damage than the Element's Damage Threshold, roll on the Determining Critical Hits Table. This is an exception to the normal rules for critical hits.

Composite Structure
Composite internal structure is less durable than standard and endo-steel internal structures. Determine the 'Mech's *BattleForce* structure based on its engine type, then multiply the result by 0.5 and round up to the nearest whole number.

Reinforced Structure
This internal structure is much more resilient than other structure types. Determine the 'Mech's *BattleForce* structure based on its engine type and multiply the result by 2.

ProtoMechs
Each ProtoMech Unit has a Structure Value of 1 for each ProtoMech in the Element. A full-strength Unit always has a Structure Value of 5.

Vehicles (Combat)
To find the Structure Value, total the internal structure (including turrets or rotors if the vehicle has them) and divide the total by 10. Then round up to the next whole number.

Vehicles (Support)
Determining the Structure Value for a Support Vehicle depends on its type.

- **Airship, Fixed-Wing and Satellite:** Refer to *Aerospace Ele-*

'MECH STRUCTURE CONVERSION TABLE

	'Mech Tonnage																		
Engine Type	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**	**100**
Inner Sphere																			
Compact	1	2	2	3	3	4	4	5	5	6	7	7	7	8	8	9	10	10	10
Standard Fusion*	1	1	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	8	8
Large Fusion†	1	1	1	2	2	2	2	3	3	4	4	4	4	5	5	5	6	6	6
Light Fusion	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	5	5	5	5
XL Fusion‡	1	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	4	4	4
Large XL Fusion	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	4	4	4
Large XXL Fusion	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3
Clan																			
XL Fusion	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	5	5	5	5
Large XL Fusion	1	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	4	4	4
XXL Fusion	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	4	4	4
Large XXL Fusion	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3

*Includes: CV Fission, CV Fuel Cell, Fission, Fuel Cell, ICE and Clan IndustrialMechs using these engine types. †Includes: Large ICE ‡Includes: Large Light

ments for structural integrity conversion.

- **Hover, Tracked, VTOL, Wheeled and WiGE:** Total the internal structure (including turrets and/or rotors if the vehicle has them) and divide the total by 10. Then round up to the next whole number.
- **Rail:** Total the internal structure (including turrets if
- the vehicle has them) and divide by 10 if the Element is 300 tons or less or by 15 if the Element is over 300 tons; round up to the next whole number.
- **Naval:** Total the internal structure (including turrets if the vehicle has them) and divide by:
  - 10 if the Element is 300 tons or less
  - 15 if the Element is 300.5—500 tons
  - 20 if the Element is 500.5—6,000 tons
  - 25 if the Element is 6,000.5—12,000 tons
  - 30 if the Element is 12,000.5—30,000 tons
  - 35 if the Element is 30,000.5—100,000 tons

Round up to the next whole number to find the *BattleForce* Structure Value.

CONVERTING WEAPONS

The following rules cover the conversion of an Element's weaponry for *BattleForce* play.

Attacks

Many Elements may make only one weapon attack per turn. However, several have additional weapons or equipment that allow them to make multiple attacks. Weapons are converted separately for each attack, but overheating (if applicable) applies to all weapons as a whole, not just to weapons in a single attack.

Autocannon/SRM/LRM: Elements other than aerospace and infantry (including battle armor) may use special munitions with autocannon, SRMs, LRMs, and MMLs. If the total heat-modified, medium-range damage from each type of these weapon systems is equal to 10 or more points, the damage value for these weapons is calculated separately so that they make use of specialty ammo (see Alternate Munitions, p. 308). This applies only to Light and Standard autocannon (not LB-X, Rotary, Ultra, and so on), and Standard SRM, MML, and LRM launchers (not Artemis-enabled, Improved One-Shot, One Shot, Streak, and so on). If each type of system cannot do 10 or more points of damage at medium range after heat modification, include it in the base damage instead. For MMLs, count their full short range damage and half their medium range damage as SRM, and their full long range damage and half their medium range damage as LRM. For example: before heat-modification, an Element with 2 AC/5s and 1 SRM 6 would initially calculate the AC/5s separately as AC damage, but the SRM 6 would be calculated as part of the base damage. However, heat-modification may cause the ACs to be included in base damage.

Capital Missiles: Capital missiles use capital ranges but do damage as a separate attack. On some Elements, capital weapons are combined per firing arc into individual attacks.

Capital Weapons: Capital weapons have their own set of ranges and do damage as a separate attack.

Indirect Fire: Non-aerospace Elements may also calculate an indirect attack if they meet the requirements for the Indirect Fire special ability. As an indirect fire attack is made in lieu of a standard weapon attack, it does not have a full attack profile. Calculate the damage value for indirect fire using the long-range Damage Value for the qualifying weapons.

Sub-Capital Weapons: These weapons use capital ranges, but are calculated as a separate attack because they have different modifiers.

Standard Weapons: Anything not used for physical attacks or singled out in this section is a standard weapon. Generally, all standard weapons on an Element are combined for one attack (see *Base Damage*, p. 360).

Torpedo: If the Element is a 'Mech, Combat Vehicle, or Small or Medium Support Element, combine all non-rear mounted torpedo weapons on an Element into a single torpedo attack. If the Element is a Large, Very Large or Super Large Support Ele-

ment, calculate a separate torpedo attack for each arc (if applicable). Do not include Torpedo bomb munitions in this calculation.

Turret (Non-Mobile Structures): Add all the weapons in each turret to calculate the base damage for each turret as a separate attack. If the turret also mounts indirect fire weapons, calculate an indirect fire attack for the turret. Turrets also calculate AC, LRM, and SRM damage separately from their base damage (see corresponding Special Ability descriptions).

Turret (Mobile Structures): Combine all turrets in each region into a single turret, and then add all the weapons in the combined turret to calculate the base damage for the turret as a separate attack. If the turret also mounts indirect fire weapons, calculate an indirect fire attack for the turret. Turrets also calculate AC, LRM, and SRM damage separately from their base damage (see corresponding Special Ability descriptions).

Damage Values

BattleForce base weapon damage depends on the total amount of damage the Element can inflict in an attack. The instructions at the end of this section cover special rules for different Element types. An Element's complement of weapons does damage at short, medium, long and extreme ranges.

Determining these values from *BattleTech* statistics consists of three steps, explained in detail below. First, find the base damage done at each range (for each attack). Then adjust this damage based on the heat generated (if applicable). Finally, divide the modified total for each range by 10 and round up to the next whole number to find the final Damage Value for that range. If the Element can overheat by firing all of its weapons and moving in the most heat-intensive way possible, the Element may need to have an Overheat Value as well (see *Overheat Value*, p. 213).

The Weapons and Equipment Conversion tables on pp. 375-379 show *BattleForce* statistics for all current *BattleTech* weapons. Players may convert future *BattleTech* (and custom) weapons using the rules in this section.

Range Brackets

Whether or not a weapon can do damage in a given range bracket is a function of its maximum range in *BattleTech* hexes.

Standard Weapons: Weapons with a maximum range equal to or less than 3 are limited to the short range bracket. Weapons with a maximum range equal to or less than 15 may do damage in the short and medium range brackets. Weapons with a maximum range equal to or greater than 16 may do damage in short, medium and long range brackets. Weapons with a maximum range of 24 or more are capable of doing damage in any range bracket, including extreme range. Some weapons have had their range brackets adjusted for game play purposes.

Extreme range is not used by ground Elements under standard rules. (See p. 282 in Advanced Rules for ground Element extreme range rules.)

Capital & Sub-Capital Weapons: Capital weapons have a separate range bracket from standard weapons. Weapons with a maximum range of 12 or less are limited to the short range bracket. Weapons with a maximum range of 24 or less may do damage in short and medium range brackets. Weapons with a range of 40 or less may do damage in short, medium and long range brackets. Finally, weapons with a range of 41 or more may do damage in any range bracket, including extreme range.

Base Damage

To find the base damage, first add up all the weapon damage for each range bracket (see the Weapon and Equipment Conversion Tables, pp. 375-379). For example, a medium laser can do damage at medium and short range, so it adds its 5 points of damage in each range. Remember to include LRMs or MMLs in the indirect range bracket, in addition to short, medium and long.

Next, apply any of the following as appropriate to the base damage calculations and round normally to two decimal places (after applying all modifiers, if more than one applies). All modifiers are cumulative unless otherwise stated. The final result is the base damage.

Artillery Weapons: Record each type of artillery separately (see *Artillery*, page 285).

Adjustable To-Hit Modifiers: Use the best available to-hit modifier.

Ammunition: If an ammunition-fed weapon does not have enough ammunition to fire for at least ten turns, reduce the overall damage of the weapon by 25 percent. Do not apply this modifier to one-shot (OS) missiles and rocket launchers.

Capital Weapons: Capital weapons are already in *BattleForce* scale.

Cluster Weapons: Use the damage inflicted by an average cluster hit roll (a result of 7 on the Cluster Hits Table; see p. 116, *TW*). Refer to the individual weapon type below for additional rules. This applies to cluster attacks as well, such as battle armor. Some cluster weapons have additional modifiers as described below:

- **Artemis IV:** Use 9 instead of 7 on the Cluster Hits Table for MMLs, LRMs or SRMs equipped with Artemis IV.
- **Artemis V:** Use a 10 instead of a 7 on the Cluster Hits Table for SRMs and LRMs equipped with Artemis V.
- **ATMs (Advanced Tactical Missiles):** ATM launchers always use the 9 column, with damage for HE ammunition at short range, standard ammunition at medium range and ER ammunition at long range.
- **LB-X Autocannon:** See *To-Hit Modifiers*, p. 361. LB-X autocannons always fire in cluster mode in *BattleForce*.
- **HAGs (Hyper-Assault Gauss Rifles):** Use the 9 column on the Cluster Hits Table at short range, the 7 column at medium range and the 5 column at long range.
- **Machine Gun Arrays:** Multiply the cluster hit result by the Damage Value of the machine gun type.
- **MMLs (Multi-Missile Launchers):** Use the damage for SRM Ammunition at short range and LRM Ammunition at long range. For medium range, add the damage for an SRM salvo and the damage for an LRM salvo, then divide by 2 and round normally.
- **MRMs (Medium Range Missiles):** See *To-Hit Modifiers*, p. 361. This may also be modified by the Apollo FCS.
- **Rocket Launchers:** Multiply the damage for these weapons by 0.10.
- **Streak Missiles:** Use the maximum damage for the weapon type—that is, a roll of 12 on the Cluster Hits Table.
- **One-Shot (OS)/Improved One-Shot (I-OS) Missiles:** Multiply the damage for these weapons by 0.10.
- **UACs (Ultra Autocannons):** Multiply the damage for these weapons by 1.50.

Configurable Damage (Bombast): Use the maximum damage setting for these weapons.

Heat-Causing Weapons: Use the average heat inflicted to determine the rating of the Heat special ability.

MINIMUM RANGE DAMAGE ADJUSTMENT TABLE

BattleTech Minimum Weapon Range	Multiply Short Range Weapon Damage By
1	0.92
2	0.83
3	0.75
4	0.66
5	0.58
6+	0.50

Minimum Ranges: Weapons with minimum ranges adjust their short-range Damage Value according to the Minimum Range Damage Adjustment Table (above).

Pintle Mounts: Treat weapons mounted on pintles as forward firing.

PPC Capacitor: PPC capacitors add 5 points of damage to PPCs, but because of the reduced firing rate, most PPCs do less damage with capacitors in *BattleForce*. Determine the damage each type of PPC does with the capacitor and multiply this by 0.50.

Rear-Firing Weapons: Do not add damage for rear-firing weapons. Unless an Element does more damage with rear firing weapons than it does with forward firing weapons, in which case do not add forward firing weapons.

Sponson Turrets: Treat weapons mounted in sponsons as forward firing.

Sub-Capital Weapons: These weapons are in standard scale and will be converted to *BattleForce* scale in a later step.

Targeting Computers: Multiply damage for weapons linked to targeting computers by 1.10.

To-Hit Modifiers: Weapons with to-hit bonuses or penalties modify their damage according to the bonus or penalty. Anything that modifies a weapon's to-hit chance (such as the Actuator Enhancement System) modifies a weapon's damage per these rules.

- **–4 To-Hit:** Multiply weapon damage by 1.20.
- **–3 To-Hit:** Multiply weapon damage by 1.15.
- **–2 To-Hit (Pulse Lasers):** Multiply weapon damage by 1.10.
- **–1 To-Hit (LB-X Autocannon, AES, Artemis V):** Multiply weapon damage by 1.05.
- **+1 To-Hit (Heavy Lasers, MRMs, Rocket Launchers):** Multiply weapon damage by 0.95.
- **+2 To-Hit:** Multiply weapon damage by 0.90.
- **+3 To-Hit:** Multiply weapon damage by 0.85.
- **+4 To-Hit:** Multiply weapon damage by 0.80.

Variable To-Hit Modifiers (VSP Laser): Modify damage based on the to-hit modifier at each range.

Variable-Damage Weapons (Heavy Gauss Rifle, Snub-Nose PPC, VSP): Use the weapon's *BattleTech* Damage Value at short range for *BattleForce* short range, modified for minimum range if applicable. For *BattleForce* medium range, if the weapon's *BattleTech* long range is 16 hexes or more, use the weapon's *BattleTech* medium range damage; otherwise use the *BattleTech* long range damage. For *BattleForce* long range, use the *BattleTech* long range damage.

Conventional Infantry

Damage Values are calculated slightly differently for conventional infantry. Short range damage is equal to the maximum damage points the Element will inflict at ranges 0 thru 3. Medium range damage is likewise equal to the maximum damage points the Element will inflict at ranges 4 thru 15. Finally, long range damage is equal to the maximum damage points the Element will inflict at ranges greater than 15.

These Damage Values are divided by 10 and rounded up to the next whole number.

Aerospace Small Craft, DropShips and JumpShips

These Elements have four firing arcs, and calculate damage separately for each. Use the rules in this section to calculate damage for each firing arc as follows:

Spheroid Small Craft, DropShips and JumpShips:

- **Nose**: Add up all the damage for the Nose weapons, plus one-half the damage for the Fore Left and Fore Right weapons.
- **Left/Right Side**: Add one-half the damage from the Fore and Aft Side weapons.
- **Aft**: Add up all the damage for the Aft weapons, plus one-half the damage from the Aft Left and Aft Right weapons.

Aerodyne Small Craft and DropShips:

- **Nose**: Add up all the damage for the Nose weapons.
- **Left/Right Wings**: Add up all the damage for the Right and Left wing weapons, respectively.
- **Aft**: Add up all the damage for the Aft weapons, plus all the damage for any rear-mounted wing weapons.

Capital Weapons: DropShips armed with capital-scale missiles track their damage separately from smaller weapons. Calculate capital damage for each arc using the same formulas for standard damage.

Sub-Capital Weapons: These weapons are combined into separate attacks for each arc.

Point Defense Weapons: For Small Craft, DropShips, JumpShips, WarShips, Space Stations and Satellites, include these weapons in damage calculations and grant the Element the Point Defense (PNT#) special ability (see p. 352).

The abstract nature of *BattleForce* lets an Element use these weapons both offensively and in point defense mode in the same turn.

Mobile Structures

Combine all non-turreted weapons in each region to calculate the base damage for that region. Turrets for each region are calculated separately (see Turrets, above). Calculate AC, LRM, and SRM (see corresponding Special Ability descriptions) damage separately as well.

ProtoMechs and Battle Armor

These Elements are comprised of multiple troopers. Total the damage for all members of the Element to determine base damage.

Battle Armor Anti-Personnel Weapons: Each Anti-Personnel weapon mount can be equipped with a single type of weapon. Consult the Generic Conventional Infantry Damage Table (see p. 216, *TW*) to find the damage that the Element

inflicts at short range with these weapons. Multiple AP mounts are handled independently of each other. Include DWP weapons in the base calculation.

Battle Armor Vibro-Claws: Add 1 point of damage to the battle armor Element's base short range Damage Value for each Vibro-Claw equipped Element.

Large, Very Large and Super Large Support Vehicles

These Elements may have multiple turrets and multiple firing arcs, similar to DropShips. These Elements have 4 primary firing arcs, and 1 additional arc for each turret. Remember to calculate indirect and torpedo attacks, and AC, SRM and LRM damage for each arc and turret if applicable. Calculate the damage for each arc as follows:

- **Forward**: Add up all the damage for the Forward weapons.
- **Left/Right Side**: Add the damage from the Fore and Aft Side weapons.
- **Aft**: Add up all the damage for the Aft weapons.
- **Turrets**: Calculate each turret separately.

Satellites and Space Stations

These Elements have six firing arcs, and calculate damage separately for each. These Elements may make one attack per arc. Space Stations may have three additional attacks per arc: capital weapons, sub-capital weapons and capital missiles. The damage for each of these types of weapons is added up separately for each arc to get the base damage for that arc.

WarShips

These Elements have eight firing arcs, and calculate damage separately for each. Additionally, a WarShip may have up to four attacks per arc: capital weapons, sub-capital weapons, capital missiles and standard weapons. The damage for each of these types of weapons is added up separately for each arc to get the base damage for that arc.

Point Defense Weapons: Include these weapons in damage calculations for standard weapons and grant the Element the Point Defense (PNT#) special ability (see p. 352).

The abstract nature of BattleForce lets an Element use these weapons both offensively and in point defense mode in the same turn.

CONVERTING HEAT

For Elements that track heat, Damage Values may be adjusted based on the amount of heat they can dissipate. The following section describes how to convert *BattleTech* heat to *BattleForce* heat. 'Mechs, aerospace fighters, Small Craft, DropShips, JumpShips, Satellites, Space Stations and Warships may need to adjust their weapon damages based on their heat dissipation ability.

Find the total heat generated by firing all weapons (including defensive systems like AMS) and add to that number the heat for maximum movement (either 2 heat points for Running/Flanking movement or the heat points generated by the Unit's maximum jump if the Unit has Jumping MP). Remember that aerospace Elements never generate heat for movement. Subtract 4 from the total. If the resulting number is greater than the amount the Element's heat sinks can dissipate (doubling the heat dissipated for double heat sinks), adjust the base damage as follows: Multiply the total base damage by the Element's heat sinks (double the second number if the Unit has double heat sinks). Divide the result by the Element's maximum heat output minus 4. Round the result up to the next whole number. The final result is the heat-modified damage.

If an Element has multiple types of attacks per arc (as with most WarShips, for example), calculate the heat-modified damage for each type of attack separately:

Heat-modified damage = (Base damage for range bracket x total heat dissipation) ÷ (maximum heat output – 4)

The following special cases apply to heat calculations.

IndustrialMechs: Do not include Walking or Running heat for IndustrialMechs.

- **Rear-Firing Weapons:** Do not include heat for these weapons.
- **RACs (Rotary Autocannon):** Multiply the heat generated by a RAC by 6.
- **Rocket Launchers:** Do not include heat for these weapons.
- **One-Shot (OS) Missiles:** Do not include heat for these weapons.
- **Stealth Armor:** Include the 10 points of heat generated by Stealth Armor. *BattleForce* rules assume it is always on.
- **UACs (Ultra Autocannons):** Multiply the heat generated by a UAC by 2.

DETERMINING FINAL DAMAGE VALUE

Divide the heat-modified damage by 10 (rounding up to the next whole number for base damage, and rounding normally for AC, LRM, and SRM damage) to find the *BattleForce* Damage Value at each range.

Capital Weapons: Capital weapons and capital missiles are already in *BattleForce* scale.

Sub-Capital Weapons: These weapons are in standard scale, and must be divided by 10 (and rounded up to the next whole number) to find their *BattleForce* damage value at each range.

CALCULATING OVERHEAT VALUE ('MECHS AND AEROSPACE FIGHTERS ONLY)

If an Element can overheat (as determined in the Heat step), it may have an Overheat Value. Re-figure the Element's damage—without factoring in heat—to find the maximum possible damage. Include AC, SRM and LRM damage for standard ammunition in this total. If an Element's *BattleForce* damage at medium range is higher when heat modifications are not applied, it can overheat in *BattleForce*. An Element's Overheat Value is equal to the maximum medium range damage minus the normal (adjusted for heat) medium range Damage Value, to a maximum of 4. If the Element has no medium range Damage Value, apply this process to short range.

CONVERTING SPECIAL EQUIPMENT TO SPECIAL ABILITIES

Many *BattleTech* items function as special abilities in *BattleForce*. Refer to the special ability descriptions on pp. 342-353. Some equipment grants multiple abilities, while other abilities require multiple pieces of equipment. Intrinsic abilities, i.e. SOA for 'Mechs are not listed in the Element's stat block.

DETERMINING BASE POINT VALUE

An Element's Point Value in *BattleForce* derives directly from its Battle Value, divided by 100, rounded normally to a minimum of 1.

CONVERTING CONVENTIONAL AND AEROSPACE FIGHTERS, FIXED WING AND AIRSHIP SUPPORT VEHICLES:
A *CORSAIR* AEROSPACE FIGHTER



Determine Element Composition

Each aerospace fighter, conventional fighter, Fixed-Wing Support Vehicle or Airship is treated as a single Element in *BattleForce*.

Determining Weight/Size Class

As a 50-ton fighter, the *Corsair* is in the Medium weight class.

Converting MP and Movement Modes

The CSR-V12 *Corsair* has a Safe Thrust Rating of 6. As an aerodyne aerospace fighter, the *Corsair* also receives the Aerodyne movement mode. This translates into a *BattleForce* TP of 6a.

Converting Armor

The *Corsair* has an Armor Factor of 216. Consulting the Armor Conversion Table, this gives an Armor Value of 7. Dividing this by 10 and rounding up yields a Damage Threshold of 1.

Converting Structure

The *Corsair* has an SI of 6. Dividing this by 2 gives a *BattleForce* Structure of 3.

Converting Weapons Values

The *Corsair* is armed with 2 large lasers, 2 medium lasers and 4 small lasers. It has 16 single heat sinks. Two of the small lasers fire to the rear and thus are not included in the Base Damage Value.

Weapon	Short	Medium	Long	Extreme
Large Laser	8	8	0	0
Large Laser	8	8	0	0
Medium Laser	5	5	0	0
Medium Laser	5	5	0	0
Small Laser	3	0	0	0
Small Laser	3	0	0	0
Base Damage	**32**	**26**	**0**	**0**

Converting Heat

The *Corsair* generates no heat for movement. Firing all its weapons builds up 24 points of heat (8 for each large laser, 3 for each medium laser and 1 for each small laser). Subtracting 4 from this total nets a result of 20. As the *Corsair* can only dissipate 16 points of heat, its base damage must be adjusted for heat. The damage for each range bracket is multiplied by the heat sink capacity of the *Corsair*, and then divided by the heat output minus 4. The heat modified damage formula is:

Heat-modified damage = (base damage for range bracket x total heat dissipation) ÷ (maximum heat output – 4)

Heat-modified damage (*Corsair*) = (base damage x 16) ÷ 20

BASE DAMAGE

Short	Medium	Long	Extreme
32	26	0	0

HEAT-MODIFIED FORMULA

Short	Medium	Long	Extreme
(32 x 16) ÷ (24 – 4)	(26 x 16) ÷ (24 – 4)	—	—

HEAT-MODIFIED DAMAGE

Short	Medium	Long	Extreme
25.6	20.8	0	0

Determining Final Damage Value

The *Corsair's* final Damage Value is equal to its heat-modified damage divided by 10 and rounded up to the next whole number.

	Short	Medium	Long	Extreme
Heat-modified damage	25.6	20.8	0	0
÷10	2.56	2.08	0	0
Final Damage Value	**3**	**3**	**0**	**0**

Calculating Overheat Value

Though the *Corsair's* final damage is heat-modified, it does not have an Overheat Value. The base Damage Value for medium range is 26; dividing this by 10 yields 2.6, which rounds up to 3. As the final heat-modified Damage Value at medium range is already 3, the *Corsair* will not overheat.

Converting Special Equipment to Special Abilities

The *Corsair* can carry bombs, and has the Spaceflight and VSTOL special abilities.

Determining Base Point Value

With a BV of 1,190, the *Corsair* has a *BattleForce* Point Value of 12.

CSR-V12 *CORSAIR*

Stat	Value
TP	6a
Damage S/M/L/E	3/3/—/—
Overheat	—
Weight Class	2
Armor-T/Structure	7-1/3
Point Value	12
Specials	BOMB2, SPC, VSTOL

CONVERTING BATTLE ARMOR:
A CLAN ELEMENTAL POINT



Determining Element Composition

A battle armor Element represents a 4-man squad, a 5-man Point or a 6-man Level I of battle armor. Players cannot mix different types of battle armor in a single Element.

Determining Weight/Size Class

A battle armor Element is always Weight Class 1 (Light) in *BattleForce*.

Converting MP and Movement Modes

The standard Clan Elemental has 1 MP of Ground Movement and Jumping MP 3 once its Detachable Weapon Pack (SRM-2) is jettisoned; its Movement Value is 1/3j.

Converting Armor

The standard Clan Elemental has 10 points of armor. With 5 troopers to a Point, that gives a total value of 50. Consulting the Armor Conversion Table gives an Armor Value of 2.

Converting Structure

Battle armor Elements have a Structure Value of 2.

Converting Weapons

A Point of standard Clan Elementals has 5 small lasers, 5 SRM-2 launchers with 2 shots and 5 anti-personnel weapon mounts (armed with machine guns in this example). Because the SRM-2 only has two rounds of ammo, its damage is reduced by 25 percent.

Weapon	Short	Medium	Long
Small Laser	9	0	0
SRM 2 (2 rounds)	9	9	0
AP Weapon (Machine Gun)	3	0	0
Base Damage	**21**	**9**	**0**

Converting Heat

Battle armor Elements do not generate heat.

Determining Final Damage Value

As there is no heat to modify the damage for the battle armor Element, its final Damage Value is its base damage divided by 10 and rounded up.

	Short	Medium	Long
Base Damage	21	9	0
÷10	2.1	0.9	0
Final Damage Value	**3**	**1**	**0**

Converting Special Equipment to Special Abilities

A Point of standard Clan Elementals is capable of operating as mechanized battle armor and can be carried in 5 tons of cargo space. The notations MEC and CAR5 are added to the Element's special abilities.

Determine Base Point Value

With a BV of 443, the standard Clan Elemental Point has a *BattleForce* Point Value of 4.

CLAN ELEMENTAL POINT
(SMALL LASER AND AP MACHINE GUN)

Stat	Value
MP	1/3j
Damage S/M/L/E	3/1/—/—
Overheat	—
Weight Class	1
Armor/Structure	2/2
Point Value	4
Specials	MEC, CAR5

CONVERTING CONVENTIONAL INFANTRY:
A CLAN FOOT INFANTRY STAR



Determining Element Composition

A conventional infantry Element represents a platoon, Point or Level I of soldiers.

Determining Size/Weight Class

Infantry Elements are always Weight Class 1 in *BattleForce*.

Converting MPs and Movement Modes

A Clan 25-man Foot Infantry Platoon has a *BattleTech* MP of 1. This translates into a *BattleForce* MP of 1f.

Converting Armor

The Clan Foot Infantry Platoon has 25 members. Dividing this by 15 gives 1.667, rounded up to 2 as the final Armor Value.

Converting Structure

Infantry Elements have a Structure Value of 1.

Converting Weapons

The platoon is armed with assault rifles, which gives the Element a maximum Damage Value of 10 and a maximum range of 3.

Weapon	Short	Medium	Long
Infantry	10	0	0
Base Damage	**10**	**0**	**0**

Converting Heat

Infantry Elements do not generate heat.

Determining Final Damage Value

As there is no heat to modify the damage for the infantry Element, its final Damage Value its base damage divided by 10 and rounded up.

Calculating Overheat Value

Infantry Elements do not have an Overheat Value.

	Short	Medium	Long
Base Damage	10	0	0
÷10	1	0	0
Final Damage Value	**1**	**0**	**0**

Converting Special equipment to Special Abilities

As foot infantry, the Element gets the CAR3 special ability, indicating that it requires IT3 to transport it.

Base Point Value

The infantry platoon has a BV of 82, giving it a *BattleForce* Point Value of 1.

CLAN FOOT INFANTRY STAR

Stat	Value
MP	1f
Damage S/M/L/E	1/1/—/—
Overheat	—
Weight Class	1
Armor/Structure	2/1
Point Value	1
Specials	CAR3

CONVERTING VEHICLES: AN ENYO STRIKE TANK



Determining Element Composition

In *BattleForce,* each Combat Vehicle is considered an individual Element.

Determining Weight/Size Class

At 55 tons, the Enyo is in the Medium weight class.

Converting MPs and Movement Modes

The Enyo Strike Tank is a tracked vehicle with a Cruising MP of 6. That gives it a *BattleForce* MP of 6t.

Converting Armor

The tank has a *BattleTech* armor value of 144. Consulting the Armor Conversion Table, this gives it a *BattleForce* Armor Value of 5.

Converting Structure

The Enyo Strike Tank is a 55-ton Combat Vehicle with a turret, giving it a total of 30 Internal Structure points. Dividing by 10 to find the Structure Value gives a result of 3.

Converting Weapons

The tank has multiple weapons, some turret mounted, some mounted on the body. It will be necessary to calculate the turret weapons separately.

Turret Weapons	**Short**	**Medium**	**Long**	**Extreme**
Large Pulse Laser	11	11	11	—
Streak SRM 6	12	12	—	—
Base Damage	**23**	**23**	**11**	**0**
Non-Turret Weapons	**Short**	**Medium**	**Long**	**Extreme**
Streak SRM 6	12	12	—	—
Streak SRM 6	12	12	—	—
Machine Gun	2	—	—	—
Machine Gun	2	—	—	—
Base Damage	**28**	**24**	**0**	**0**

Converting Heat

Vehicles are always heat neutral and do not need to adjust weapon damage for heat.

Calculating Overheat Value

Vehicles cannot overheat in *BattleForce*.

Determining Final Damage Value

As there is no heat to modify the damage for the vehicle Element, its final Damage Value is its base damage divided by 10 and rounded up.

Turret Weapons	**Short**	**Medium**	**Long**	**Extreme**
Base damage	23	23	11	0
÷10	2.3	2.3	1.1	0
Final Damage Value	**3**	**3**	**2**	**0**
Non-Turret Weapons	**Short**	**Medium**	**Long**	**Extreme**
Base Damage	28	24	0	0
÷10	2.8	2.4	0	0
Final Damage Value	**3**	**3**	**0**	**0**

Converting Special Equipment and Abilities

The Enyo Strike Tank is relatively sparse on special abilities, though its single turret gives it the Turret special ability.

Determining Base Point Value

The Enyo Strike Tank has a BV of 1,182, giving it a *BattleForce* Point Value of 12.

ENYO STRIKE TANK

Stat	Value
MP	6t
Damage S/M/L/E	3/3/—/—
Overheat	—
Weight Class	2
Armor/Structure	5/3
Point Value	12
Specials	TUR: 3/3/2/—

CONVERTING SMALL CRAFT AND DROPSHIPS:
A *NEKOHONO'O*-CLASS DROPSHIP



Determine Element Composition

Small Craft and DropShips are treated as individual Elements.

Determining Weight/Size Class

At 16,000 tons, the *Nekohono'o* is in the Large size class.

Converting MPs and Movement Modes

A *Nekohono'o*-class DropShip is a spheroid vessel with a Safe Thrust of 5, giving it a *BattleForce* TP of 5p.

Converting Armor

The *Nekohono'o* has an Armor Factor of 310 in the nose, 236 on each side and 176 in the rear. This gives it a total Armor Factor of 958. Consulting the Armor Conversion Table, the *Nekohono'o* has a *BattleForce* Armor Rating of 32.

Converting Structure

The DropShip has 16 points of Structural Integrity. Dividing this by 2 gives a result of 8.

CAPITAL WEAPONS	Short	Medium	Long	Extreme
Nose				
3 Kraken-T (30 Missiles)	30	30	30	30
Fore Left and Right				
None	—	—	—	—
Aft Left and Right				
None	—	—	—	—
Aft				
None	—	—	—	—
Base Damage	**30**	**30**	**30**	**30**
STANDARD WEAPONS	**Short**	**Medium**	**Long**	**Extreme**
Nose				
2 MRM 40 (36 Rounds)	45.6	45.6	0	0
5 Streak SRM 6 (75 Rounds)	60	60	0	0
Total	**106.6**	**106.6**	**0**	**0**
Fore Left and Right				
3 MRM 30 (36 Rounds)	51.3	51.3	0	0
2 Gauss Rifles (32 Rounds)	24.9	30	30	0
2 LRM 20 w/ Artemiv IV (36 Rounds)	16	32	32	0
5 ER PPCs	50	50	50	0
Total	**142.2**	**163.3**	**112**	**0**
Aft Left and Right				
5 LB 10-X AC (200 Rounds)	31.5	31.5	31.5	0
3 Streak SRM 4 (75 Rounds)	24	24	0	0
3 ER Medium Lasers	15	15	0	0
Total	**70.5**	**70.5**	**31.5**	**0**
Aft				
7 Large Pulse Lasers	69.3	69.3	0	0
Total	**69.3**	**69.3**	**0**	**0**
Base Damage				
Nose (Nose + 1/2FL + 1/2FR)	248.8	269.9	112	0
Left (1/2FL + 1/2AL)	106.35	116.9	71.75	0
Right (1/2FR + 1/2AR)	106.35	116.9	71.75	0
Aft (Aft + 1/2AL + 1/2AR)	139.8	139.8	31.5	0

Converting Weapons

As a spheroid DropShip, the *Nekohono'o* has four different weapon arcs and does two different types of damage. Each arc is added separately; capital and standard damage are likewise added separately.

Converting Heat

The *Nekohono'o* is heavily armed, but carries sufficient heat sinks to allow it to fire its full arsenal without overheating. There is no need to make heat adjustments to the Damage Values.

Determining Final Damage Value

Because the *Nekohono'o* does not modify its damage for heat, all that remains is to divide its Standard Damage Values by 10 for each range bracket, arc and damage group.

CAPITAL WEAPONS	Short	Medium	Long	Extreme
Final Damage	**30**	**30**	**30**	**30**
STANDARD WEAPONS	**Short**	**Medium**	**Long**	**Extreme**
Nose	248.8	269.9	112	0
Left	106.35	116.9	71.75	0
Right	106.35	116.9	71.75	0
Aft	139.8	139.8	31.5	0
Divide standard damage by 10 for Final Damage Values				
Nose	25	27	12	0
Left	11	12	8	0
Right	11	12	8	0
Aft	14	14	4	0

Calculating Overheat Value

DropShips cannot overheat in *BattleForce*.

Converting Special Equipment to Special Abilities

The *Nekohono'o* is armed with capital missiles (MSL) and screen launchers (Scr2). It can carry 6 fighters in a bay with 2 doors (AT6D2), 9 Small Craft in a bay with 2 doors (ST9D2), 27 squads of battle armor in a bay with 2 doors (IT108D2) and 587.5 tons of cargo in a bay with 2 doors (CT587.5D2) and it can operate in space (SPC).

Base Point Value

With a BV of 27,641, the *Nekohono'o* has a *BattleForce* Point Value of 276.

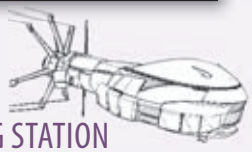


Visigoth Prime, *Gamma Garrison Galaxy (Clan Snow Raven)*

NEKOHONO'O-CLASS DROPSHIP

Stat	Value
TP	5p
Standard Damage	(S/M/L/E)
Nose	25/27/12/0
Left/Right	11/12/8/0
Aft	14/14/4/0
Cap Missile Damage	(S/M/L/E)
Nose	30/30/30/30
Left/Right	—/—/—/—
Aft	—/—/—/—
Size Class	L
Armor-T/Structure	32-4/8
Point Value	276
Specials	SCR2, MSL, AT6D2, ST9D2, IT108D2, CT587.5D2, SPC

CONVERTING SATELLITES AND SPACE STATIONS:
AN *OLYMPUS*-CLASS RECHARGING STATION



Determining Element Composition

In *BattleForce,* each of these Elements is considered an individual Element.

Determining Weight/Size Class

At 1,000,000 tons, the *Olympus* is in the Large size class.

Converting MPs and Movement Modes

The *Olympus* has station-keeping drives that provide it with 0.10 G of acceleration. This translates to 0.2 TP.

Converting Armor

The *Olympus* is protected by 60 points of Capital-Scale Armor. This is multiplied by 0.33 and rounded up to get its *BattleForce* armor value of 22. Its Damage threshold is equal to that number divided by 10 (2.2) and rounded up to 3.

Converting Structure

As a Space Station, the *Olympus* has a Structure of 1.

Converting Weapons

The *Olympus* has the same weaponry in each of its arcs: Nose, Fore Left, Fore Right, Aft Left, Aft Right and Aft.

Calculating Heat Limited Damage

The *Olympus* can generate a total of 516 points of heat, but only dissipates 200 points. Its damage will be heat modified.

Calculating Overheat Value

Satellites and Space Stations cannot overheat.

Determining Final Damage Value

The final damage is equal to the heat-modified damage divided by 10 and rounded up.

Weapon (Each Arc)	Short	Medium	Long	Extreme
1 AC/5	3.75	5	5	0
1 AC/20	20	20	20	0
2 Large Lasers	16	16	0	0
2 LRM 20	6	24	24	0
5 Medium Lasers	25	25	0	0
2 PPCs	15	20	20	0
6 Small Lasers	18	0	0	0
2 SRM 6	16	16	0	0
Base Damage	**125.75**	**126**	**49**	**0**

BASE DAMAGE (PER ARC)

Short	Medium	Long	Extreme
125.75	126	49	0

HEAT-MODIFIED FORMULA

Short	Medium	Long	Extreme
(125.75 x 200) ÷ (516 – 4)	(126 x 200) ÷ (516 – 4)	(49 x 200) ÷ (516 – 4)	—

HEAT-MODIFIED DAMAGE

Short	Medium	Long	Extreme
49.12	49.21	19.14	0

Standard Weapons	Short	Medium	Long	Extreme
Head-Modified Dmg (Per Arc)	49.12	49.21	19.14	0
÷10	4.91	4.92	1.91	0
Final Damage Value	**5**	**5**	**2**	**0**

Converting Special Equipment and Abilities

The *Olympus* has a number of special abilities: Spaceflight, 6 Small Craft Bays with 2 Doors (ST6D2), 6 aerospace fighters with 2 doors (AT2D6), 144,999 tons of cargo with 12 doors (CK144.9D12), and 3 repair facilities that count as mobile field bases in *BattleForce* (MFB).

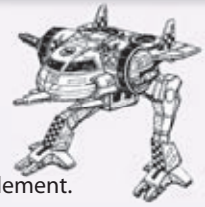
Determining Base Point Value

The *Olympus* has a BV of 11,066, giving it a *BattleForce* Point Value of 111.

OLYMPUS-CLASS SPACE STATION

Stat	Value
TP	.25
Standard Damage	(S/M/L/E)
Nose	5/5/2/0
Fore Left/Right	5/5/2/0
Aft Left/Right	5/5/2/0
Aft	5/5/2/0
Size Class	3
Armor-T/Structure	22-3/1
Point Value	111
Specials	AT6D2, CK144.9D12, MFB, SPC, ST6D2

CONVERTING 'MECHS:
AN FFL-4A *FIREFLY*



Determining Element Composition
Each 'Mech represents a single *BattleForce* Element.

Determining Weight/Size class
At 30 tons, the *Firefly* is in the Light weight class.

Converting MPs and Movement Modes
The FFL-4A *Firefly* has a Walking MP of 5 and a Jumping MP of 4. As the jumping MP is less than the Walking MP, the Jumping MP is multiplied by .66 to get a result of 2.64, which rounds up to 3. In *BattleForce*, the *Firefly*'s MP is 5/3j. If it had a Jumping MP of 5, its *BattleForce* MP would be 5j.

Converting Armor
The *Firefly* has an Armor Factor of 104. Consulting the 'Mech Armor Conversion Table gives a *BattleForce* Armor Value of 3.

Converting Structure
The *Firefly* is a 30-ton BattleMech with an Inner Sphere standard engine. On the 'Mech Structure Conversion Table, this gives the 'Mech a Structure Value of 3.

Converting Weapons
The Firefly is armed with 3 medium lasers, 4 small lasers and 1 LRM-5. Calculate the base damage in each of the three range brackets and for the Indirect Fire special ability. The Firefly does not calculate LRM damage separately as it cannot do 10 or more points of damage with LRMs.

Weapon	Short	Medium	Long	Indirect
Medium Laser	5	5	0	0
Medium Laser	5	5	0	0
Medium Laser	5	5	0	0
Small Laser	3	0	0	0
Small Laser	3	0	0	0
Small Laser	3	0	0	0
Small Laser	3	0	0	0
LRM 5	1.5	3	3	3
Base Damage	**28.5**	**18**	**3**	**3**

Converting Heat
The *Firefly* has 10 single heat sinks. Its medium lasers generate 3 points of heat each, for a total of 9. Each small laser generates 1 point of heat (for a total of 3). The LRM-5 generates 2 points of heat. Heat from movement (jumping) will be 3 points. This gives a total heat of 9 + 3 + 2 + 3 = 17. After subtracting 4 to give 13, this heat value is greater than the 10 points the heat sinks can dissipate, and so the player must adjust the 'Mech's Damage Values for each range bracket using the following formula. Use the Damage Value for each range bracket (including indirect). Finally, use the 'Mech's full heat dissipation and maximum heat output, rather than the heat generated for each bracket.

Heat-Modified Damage = (base damage for the range bracket x total heat dissipation) ÷ (maximum heat output – 4)

BASE DAMAGE

Short	Medium	Long	Indirect
28.5	18	3	3

HEAT-MODIFIED FORMULA

Short	Medium	Long	Indirect
(28.5 x 10) ÷ (17 – 4)	(18 x 10) ÷ (17 – 4)	(3 x 10) ÷ (17 – 4)	(3 x 10) ÷ (17 – 4)

HEAT-MODIFIED DAMAGE

Short	Medium	Long	Indirect
21.92	13.85	2.31	2.31

Determining Final Damage Value
To find the Firefly's final Damage Values, divide the heat-modified damage by 10 and round up to the next whole number.

Weapons	Short	Medium	Long	Indirect
Head-Modified Dmg	21.92	13.85	2.31	2.31
÷10	2.19	1.38	0.23	0.23
Final Damage Value	**3**	**2**	**1**	**1**

Calculating Overheat Value
The *Firefly's* medium range Damage Value without heat adjustment is 2. As this is the same as its heat-modified value of 2, the 'Mech does not get an Overheat Value.

Converting Special Equipment to Special Abilities
The *Firefly* mounts an LRM-5, so it gets the Indirect Fire special ability. As it can do 1 point of *BattleForce* damage using its LRM-5, it gets IF1.

Determining Base Point Value
The *Firefly* has a BV of 831, giving it a *BattleForce* Point Value of 8.

FFL-4A *FIREFLY*

Stat	Value
MP	5/3j
Damage (S/M/L/E)	3/2/1/—
Overheat	—
Weight Class	1
Armor/Structure	3/3
Point Value	8
Specials	IF1

CONVERTING MOBILE STRUCTURES:
A DROPSHIP MOVER PLATFORM



Determining Element Composition

In *BattleForce*, each Mobile Structure is considered an individual Element.

Determining Weight/Size Class

A Mobile Structure is always Size Class 5. Its highest hex is 4 levels, giving the structure 6 Levels.

Converting MP and Movement Modes

The DropShip Mover Platform has a maximum MP of 2, giving it a *BattleForce* MV of 2.

Converting Armor

With a total of 19 hexes, the DropShip Mover Platform must be converted into *BattleForce*-scale hexes before armor can be converted. The Element is arranged in concentric circles as shown in Diagram 1. After converting to *BattleForce* scale, the Element will have 7 hexes (six 3-hex regions shown in blue and a single 1-hex region shown in red in Diagram 2). Each hex of the Mover has 32 points of armor. Combining the armor points into regions gives each 3-hex region 96 points of armor, and the 1-hex region 32 points of armor. Consulting the Armor Conversion Table, this translates to 3 points and 1 point of *BattleForce* armor, respectively.

Converting Structure

Each hex has a CF of 150, giving each 3-hex region a CF of 450 and the 1-hex region a CF of 150. Dividing the 3-hex region's value of 450 by 30 yields 15, while dividing the 1-hex region's value of 150 yields 5. Next, the Damage Thresholds must be calculated for each hex. Each 3-hex region's value of 15, divided by 10, gives a result of 1.5, which rounds up to 2. The 1-hex region has a Damage Threshold of 1.

Converting Weapons

The DropShip Mover Platform is unarmed.

Converting Heat

Mobile Structures cannot generate heat.

Determining Final Damage Value

The DropShip Mover Platform is unarmed.

Converting Special Equipment to Special Abilities

The Element has mounted searchlights, giving it the SRCH special ability.

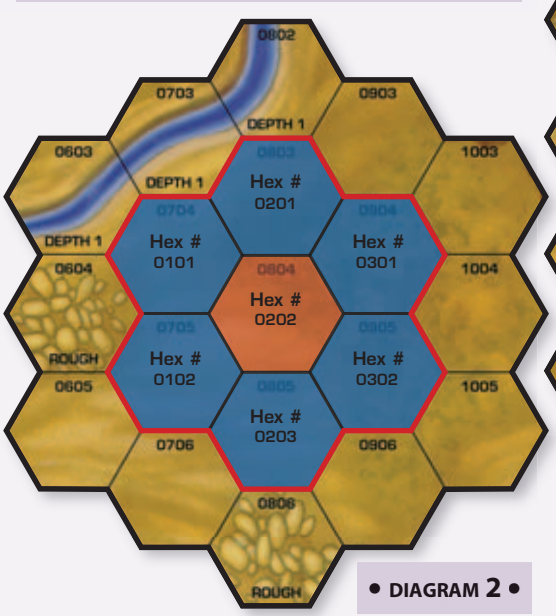
Determining Base Point Value

The DropShip Mover Platform has a BV of 6,413, giving it a *BattleForce* Point Value of 64.

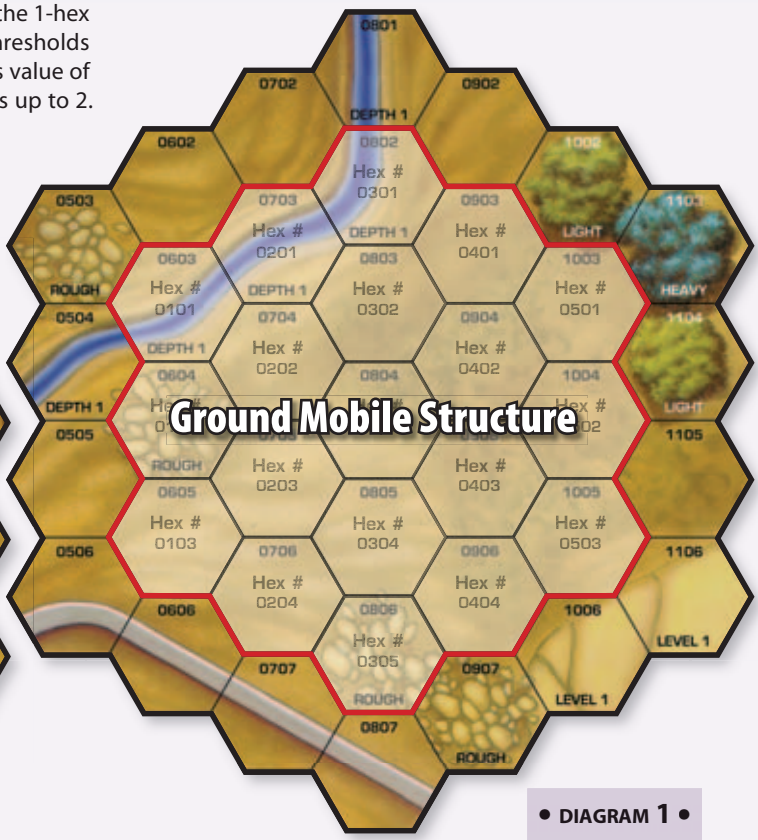
DROPSHIP MOVER PLATFORM

Stat	HEX 1-8 Value	HEX 9 Value
MP	2	
Damage (S/M/L/E)	—/—/—/—	—/—/—/—
Size Class	5	
Armor/Structure-T	3/15-2	1/5-1
Point Value	64	
Specials	CT16.5D1, SRCH	CT6D1, SRCH

• DROPSHIP MOVER PLATFORM DIAGRAMS •



• DIAGRAM 2 •



• DIAGRAM 1 •

CONVERTING PROTOMECHS:
A MIXED POINT



Determining Element Composition

In *BattleForce*, a ProtoMech Element consists of a Point of five ProtoMechs.

Determining Weight/Size Class

ProtoMech Elements are always Weight Class 1 (Light) regardless of their combined tonnage.

Converting MPs and Movement Modes

This ProtoMech Point consists of 2 *Roc*s, 1 *Hydra* and 2 *Centaur*s. The *Roc*s have a Walking MP of 5, the *Hydra* has a Walking MP of 4 and the *Centaur*s have a Walking MP of 6. The *Hydra* is the slowest member of the Point, and so the Element has a *BattleForce* MP of 4.

Only the *Roc*s have Jumping MP, and so the Element is not considered a jumping Element in *BattleForce*.

Converting Armor

The *Roc*s have an Armor Factor of 31 each, the Hydra 29 and the *Centaur*s 20 each, for a total of 131. Consulting the Armor Conversion Table, this gives a *BattleForce* Armor Value of 4.

Converting Structure

At full strength, the Element has a Structure Value of 5.

Converting Weapons

Each Roc is armed with an ER medium laser. The Hydra carries a micro pulse laser and a Streak SRM-3 with 10 rounds of ammunition. Each Centaur is armed with an ER micro laser, an SRM-2 with 10 rounds of ammunition and an LRM-3 with 8 rounds of ammunition.

Because the LRM-3 launchers carried by the Centaurs have less than 10 rounds of ammunition, their damage is reduced by 25 percent. Since the ProtoMech point cannot do a total of 10 or more points of damage with either its SRMs or its LRMs these weapons are included in the base damage.

Weapon	Short	Medium	Long	Indirect
Roc 1				
ER Medium Laser	7	7	0	0
Roc 2				
ER Medium Laser	7	7	0	0
Hydra				
Micro Pulse Laser	3.3	0	0	0
Streak SRM 3 (10 rounds)	6	6	0	0
Centaur 1				
ER Micro Laser	2	0	0	0
SRM 2 (10 rounds)	2	2	0	0
LRM 3 (8 rounds)	1.5	1.5	1.5	1.5
Centaur 2				
ER Micro Laser	2	0	0	0
SRM 2 (10 rounds)	2	2	0	0
LRM 3 (8 rounds)	1.5	1.5	1.5	1.5
Base Damage	**34.3**	**27**	**3**	**3**

Converting Heat

ProtoMechs do not track heat.

Determining Final Damage Value

As there is no heat to modify the damage for the ProtoMech Element, its final Damage Value is simply its base damage divided by 10 and rounded up.

Weapons	Short	Medium	Long	Indirect
Base Damage	34.3	27	3	3
÷10	3.43	2.7	0.3	0.3
Final Damage Value	**4**	**3**	**1**	**1**

Calculating Overheat Value

ProtoMechs cannot overheat in *BattleForce*.

Special Equipment and Abilities

The ProtoMech Point has IF1 thanks to the LRMs carried by the two *Centaur*s.

Base Point Value

Each *Roc* has a BV of 340. The *Hydra* has a BV of 199, and each *Centaur* has a BV of 200. The ProtoMech Element has a combined BV of 1,279, giving it a *BattleForce* Point Value of 13.

PROTOMECH POINT 1

Stat	Value
MP	4
Damage S/M/L/E	4/3/1/—
Overheat	—
Size Class	P
Armor/Structure	4/5
Point Value	13
Specials	IF1



ZPH-1 Tarantula, *Second Canopian Cuirassiers (Magistracy of Canopus)*

CONVERTING SUPPORT VEHICLES:
A FULMAR PATROL CRAFT



Determining Element Composition

In *BattleForce*, each Support Vehicle is considered an individual Element.

Determining Weight/Size Class

At 70 tons, the Fulmar is a Medium Support WiGE.

Converting MPs and Movement Modes

The Fulmar has a Cruising MP of 7, giving it a *BattleForce* MV of 7g.

Converting Armor

With BAR-7 armor, players must take a few extra steps to determine the Fulmar's armor. First, divide 74 points of armor by 10, yielding 7.4. Then multiply that number by 7. The result is 51.8, which rounds up to 52. Consulting the Armor Conversion Table gives a *BattleForce* Armor Value of 2.

Converting Structure

The Fulmar has 28 points of internal structure. Dividing this by 10 and rounding up gives 3 points of *BattleForce* structure.

Converting Weapons

Lightly armed, the Fulmar carries only 2 light machine guns and a mine dispenser (the mine dispenser is converted as a special ability).

Weapon	Short	Medium	Long	Extreme
Light Machine Gun	1	—	—	—
Light Machine Gun	1	—	—	—
Base Damage	**2**	**0**	**0**	**0**

Converting Heat

Like Combat Vehicles, Support Vehicles are heat-neutral Elements and do not need to adjust their damage for heat.

Calculating Final Damage Value

Divide the base damage by 10 and round up for the final damage value.

Weapons	Short	Medium	Long	Extreme
Base Damage	2	0	0	0
÷10	0.2	0	0	0
Final Damage Value	**1**	**0**	**0**	**0**

Calculating Overheat Value

Support Vehicle Elements do not have an Overheat Value.

Converting Special Equipment to Special Abilities

The Fulmar has Advanced Fire Control (AFC), the Amphibious chassis modification (AMP), 15.5 tons of cargo space with one door (CT15.5D1), and 4 mine dispensers (MDS4).

Determining Base Point Value

The Fulmar has a BV of 249, giving it a *BattleForce* Point Value of 2.

FULMAR PATROL CRAFT

Stat	Value
MP	7g
Damage S/M/L/E	1/—/—/—
Overheat	—
Size Class	2
Armor/Structure	2/3
Point Value	2
Specials	AFC, AMP, CT15.5D1, MDS4

CONVERTING LARGE, VERY LARGE AND SUPER LARGE SUPPORT VEHICLES:
A JORMUNGAND-CLASS BLUEWATER CRUISER



Determining Element Composition

In *BattleForce,* each Support Vehicle of Size Class 3 or bigger is considered an individual Element.

Determining Weight/Size Class

At 60,000 tons, and using *Total Warfare* Template E, the Jormungand is a Super Large Support Naval Vessel and uses *BattleForce* Template C.

Converting MPs and Movement Modes

The Jormungand has a Cruising MP of 6, giving it a *BattleForce* MV of 6n.

Converting Armor

The Jormungand has an Armor Factor of 3,089 points of standard armor. As this value exceeds the Armor Conversion Table, it must be calculated manually. Dividing 3,089 by 30 gives a result of 102.96, which rounds up to 103.

Converting Structure

The Jormungand has a total of 11 internal structure locations (Front, Front Left, Front Right, Aft Left, Aft Right, Aft and 5 turrets), each with 60 Internal Structure Points, for a total of 660 points. Dividing 660 by 35 yields 18.85, which rounds up to 19 points of *BattleForce* structure.

Converting Weapons

The Jormungand has a plethora of weapons. Weapons are grouped together for the Front, Left, Right and Aft arcs, plus each turret is calculated separately. The Jormungand also has torpedoes, which are calculated separately as well. Two of the turrets have artillery weapons, which are recorded as special abilities. Two of the turrets also have autocannon which are capable of doing 10 or more points of damage and will have the AC special ability.

Front Arc Weapons	Short	Medium	Long	Extreme
LRT-20	6	12	12	—
LRT-20	6	12	12	—
Base Damage	**12**	**24**	**24**	**0**

Left Arc Weapons	Short	Medium	Long	Extreme
SRT-6	8	8	—	—
SRT-6	8	8	—	—
Base Damage	**16**	**16**	**0**	**0**

Right Arc Weapons	Short	Medium	Long	Extreme
SRT-6	8	8	—	—
SRT-6	8	8	—	—
Base Damage	**16**	**16**	**0**	**0**

Aft Arc Weapons	Short	Medium	Long	Extreme
SRT-6	8	8	—	—
SRT-6	8	8	—	—
Base Damage	**16**	**16**	**0**	**0**

Turret 1 Weapons	Special Ability
3 Long Toms	ART-LT3

Turret 2 Weapons	Special Ability
3 Long Toms	ART-LT3

Turret 3 Weapons	Short	Medium	Long	*Indirect*
LRM 20	6	12	12	—
LRM 20	6	12	12	—
Base Damage	**12**	**24**	**24**	***24***

Turret 4 Weapons	Short	Medium	Long	Extreme
Base Weapons				
PPC	7.5	10	10	—
PPC	7.5	10	10	—
Base Damage	**15**	**20**	**20**	**0**
Autocannon				
AC/10	3	10	10	—
Base Damage	**18**	**30**	**30**	**0**

Turret 5 Weapons	Short	Medium	Long	Extreme
Base Weapons				
PPC	7.5	10	10	—
PPC	7.5	10	10	—
Base Damage	**15**	**20**	**20**	**0**
Autocannon				
AC/10	3	10	10	—
Base Damage	**18**	**30**	**30**	**0**

Converting Heat

Like Combat Vehicles, Support Vehicles are heat-neutral Elements and do not need to adjust their damage for heat.

Calculating Final Damage Value

The damage for each arc is divided by 10 and rounded up to calculate the final damage. The Forward, Lef/Right Side and Aft arcs only have torpedo weapons.

Calculating Overheat Value

Support Vehicle Elements do not have an Overheat Value.

Front Arc Weapons	Short	Medium	Long	Extreme
Base Damage	12	24	24	0
÷ 10	1.2	2.4	2.4	0
Final Damage	**2**	**3**	**3**	**0**

Left Arc Weapons	Short	Medium	Long	Extreme
Base Damage	16	16	0	0
÷ 10	1.6	1.6	0	0
Final Damage	**2**	**2**	**0**	**0**

Right Arc Weapons	Short	Medium	Long	Extreme
Base Damage	16	16	0	0
÷ 10	1.6	1.6	0	0
Final Damage	**2**	**2**	**0**	**0**

Aft Arc Weapons	Short	Medium	Long	Extreme
Base Damage	16	16	0	0
÷ 10	1.6	1.6	0	0
Final Damage	**2**	**2**	**0**	**0**

Turret 1 Weapons	Special Ability
3 Long Toms	ART-LT3

Turret 2 Weapons	Special Ability
3 Long Toms	ART-LT3

Turret 3 Weapons	Short	Medium	Long	*Indirect*
Base Damage	12	24	24	*24*
÷ 10	1.2	2.4	2.4	*2.4*
Final Damage	**2**	**3**	**3**	***3***

Turret 4 Weapons	Short	Medium	Long	Extreme
Base Damage	15	20	20	0
AC Damage	3	10	10	0
÷ 10				
Base Damage	1.5	2.0	2.0	0
AC Damage	0.30	1	1	0
Final Damage				
Base:	**2**	**2**	**2**	**0**
AC:	**0**	**1**	**1**	**0**

Turret 5 Weapons	Short	Medium	Long	Extreme
Base Damage	15	20	20	0
AC Damage	3	10	10	0
÷ 10				
Base Damage	1.5	2.0	2.0	0
AC Damage	0.30	1	1	0
Final Damage				
Base:	**2**	**2**	**2**	**0**
AC:	**0**	**1**	**1**	**0**

Converting Special Equipment to Special Abilities

In addition to the Torpedo and Turret special abilities, the Jormungand has Advanced Fire Control (AFC); CASE; 2 light vehicle bays, each with 1 door (VT2MD2); 1 Helipad (HELI); 12 tons of communications gear (MHQ12); 4 mounted searchlights (SRCH); a MASH Unit with 7 additional operating theaters (MASH8); a 4,000 ton cargo bay with 1 door (CK4D1); and a refrigerated cargo bay with 1,630 tons of cargo and 1 door (CK1.63D1). Its field kitchens and lifeboats have no effect in *BattleForce* and are not converted.

Determining Base Point Value

The Jormungand has a BV of 61,994, giving it a *BattleForce* Point Value of 620.

JORMUNGAND-CLASS BLUEWATER CRUISER

Stat	Value
MP	6n
Damage	*(S/M/L/E)*
Front (TOR)	2/3/3/—
Left/Right (TOR)	2/2/—/—
Aft (TOR)	2/2/—/—
Turret 1	ART-LT3
Turret 2	ART-LT3
Turret 3 (IF3)	2/3/3/—
Turret 4 Base:	2/2/2/—
Turret 4 AC:	—/1/1/—
Turret 5 Base:	2/2/2/—
Turret 5 AC:	—/1/1/—
Overheat	—
Size Class	5
Armor/Structure	103/19
Point Value	620
Specials	AFC, CASE, VT2MD2, HELI, MHQ12, SRC, MASH8, CK4D1, CK1.63D1

CAPITAL WEAPONS	Short	Medium	Long	Extreme
Nose				
6 NAC/25s	150	150	150	0
4 NAC/30s	120	120	120	0
3 Light Naval PPCs	21	21	21	0
Base Damage	**291**	**291**	**291**	**0**
Fore Left and Right				
3 NL45s	13.5	13.5	13.5	13.5
3 NL55s	16.5	16.5	16.5	16.5
Base Damage	**30**	**30**	**30**	**30**
Left/Right Broadside				
4 NAC/25s	100	100	100	0
6 NAC/30s	180	180	180	0
4 Medium Naval PPCs	36	36	36	36
Base Damage	**316**	**316**	**316**	**36**
Aft Left and Right				
3 NL45s	13.5	13.5	13.5	13.5
3 NL55s	16.5	16.5	16.5	16.5
Base Damage	**30**	**30**	**30**	**30**
Aft				
2 NAC/25s	50	50	50	0
Base Damage	**50**	**50**	**50**	**0**

CAPITAL MISSILES	Short	Medium	Long	Extreme
Nose				
1 Barracuda	2	2	2	2
Base Damage	**2**	**2**	**2**	**2**
Left/Right Broadside				
1 Barracuda	2	2	2	2
Base Damage	**2**	**2**	**2**	**2**

STANDARD WEAPONS	Short	Medium	Long	Extreme
Nose				
6 ER Large Lasers	60	60	60	60
3 ER Medium Lasers	21	21	0	0
6 ER Small Lasers	30	30	0	0
6 Large Pulse Lasers	11	11	11	0
6 Small Pulse Lasers	19.8	19.8	0	0
Base Damage	**196.8**	**196.8**	**126**	**60**
Fore Left/Fore Right				
6 ER Small Lasers	30	30	0	0
6 LB 10-X	37.8	37.8	37.8	0
Base Damage	**67.8**	**67.8**	**37.8**	**0**
Left/Right Broadside				
6 ER Large Lasers	60	60	60	60
3 ER Medium Lasers	21	21	0	0
6 ER Small Lasers	30	30	0	0
6 Large Pulse Lasers	11	11	11	0
6 Small Pulse Lasers	19.8	19.8	0	0
Base Damage	**196.8**	**196.8**	**126**	**60**
Aft Left/Aft Right				
6 ER Small Lasers	30	30	0	0
6 LB-10X	37.8	37.8	37.8	0
Base Damage	**67.8**	**67.8**	**37.8**	**0**
Aft				
6 ER Large Lasers	60	60	60	0
3 ER Medium Lasers	21	21	0	0
6 ER Small Lasers	30	30	0	0
6 Large Pulse Lasers	11	11	11	0
6 Small Pulse Lasers	19.8	19.8	0	0
Base Damage	**196.8**	**196.8**	**126**	**0**

CONVERTING WARSHIPS: A *CONQUEROR*-CLASS BATTLECRUISER/CARRIER



Determining Element Composition

In *BattleForce,* each WarShip is considered an individual Element.

Determining Weight/Size Class

At 780,000 tons, the *Conqueror* is a Medium WarShip.

Converting MP and Movement Modes

The *Conqueror* has a Safe Thrust of 3, giving it a *BattleForce* TP of 3.

Converting Armor

The *Conqueror* has an Armor Factor of 1,087 points of Capital-Scale Armor. Multiplying this by 0.33 equals 358.71, which rounds up to 359. Its damage threshold is 10 percent of this, or 35.90, which rounds up to 36.

Converting Structure

The *Conqueror* has an SI of 70. Multiplying this by 0.66 equals 46.2, which rounds down to 46 points of *BattleForce* structure.

Converting Weapons

As a WarShip, the *Conqueror* has multiple arcs and multiple types of weapons per arc.

Converting Heat

Though the *Conqueror* has an impressive number of double heat sinks that enable it to shed 3,150 points of heat each turn, its weaponry generates 7,025 points of heat. Its final damage will be heat modified.

The formula for calculating heat-modified damage is: (X x 3150) ÷ (7150 – 4), where X is the base Damage Value for each range per arc. After applying this formula to the values above, the heat-modified damage is determined:

CAPITAL WEAPON BASE DAMAGE

Firing Arcs	Short	Medium	Long	Extreme
Nose	291	291	291	0
Fore Left/Fore Right	30	30	30	30
Left/Right Broadside	316	316	316	36
Aft Left/Aft Right	30	30	30	30
Aft	50	50	50	0

CAPITAL MISSILE BASE DAMAGE

Firing Arcs	Short	Medium	Long	Extreme
Nose	2	2	2	2
Left/Right Broadside	2	2	2	2

STANDARD WEAPON BASE DAMAGE

Firing Arcs	Short	Medium	Long	Extreme
Nose	196.8	196.8	126	60
Fore Left/Fore Right	67.8	67.8	37.8	0
Left/Right Broadside	196.8	196.8	126	60
Aft Left/Aft Right	67.8	67.8	37.8	0
Aft	196.8	196.8	126	60

Calculating Final Damage Value

Capital weapons are already in *BattleForce* scale, so their heat-modified damage is their final damage. The damage for each standard-scale arc is divided by 10 and rounded up to calculate the final damage.

CAPITAL WEAPON HEAT-MODIFIED DAMAGE

Firing Arcs	Short	Medium	Long	Extreme
Nose	131	131	131	0
Fore Left/Fore Right	14	14	14	14
Left/Right Broadside	142	142	142	17
Aft Left/Aft Right	14	14	14	14
Aft	23	23	23	23

CAPITAL MISSILE BASE DAMAGE

Firing Arcs	Short	Medium	Long	Extreme
Nose	1	1	1	1
Left/Right Broadside	1	1	1	1

STANDARD WEAPON BASE DAMAGE

Firing Arcs	Short	Medium	Long	Extreme
Nose	88.29	88.299	56.53	26.91
Fore Left/Fore Right	30.41	30.41	16.96	0
Left/Right Broadside	88.29	88.299	56.53	26.91
Aft Left/Aft Right	30.41	30.41	16.96	0
Aft	88.29	88.299	56.53	26.91

Calculating Overheat Value

WarShips cannot overheat.

Converting Special Equipment to Special Abilities

The *Conqueror* carries 100 aerospace fighters with a total of 8 doors (AT100D8), and 14,217 tons of cargo with 1 door (CT14.2D1); it has capital weapons (CAP) and carries 2 DropShips (DT2); it has an HPG (HPG), a Kearny-Fuchida drive (KF) and an impressive Marine complement consisting of 50 Clan battle armor troops at 5 points each, 297 crew members at 0.25 points each, 200 non-spacer soldiers at 0.50 points each and 200 civilians at 0.10 points each, for a total of 444.25 points. Divided by 10 and rounded up, this equals 45 Marine Points. The *Conqueror* also has capital missiles (MSL). The Conqueror has a grand total of 48 ER Small Lasers and 24 Small Pulse Lasers. All of which are Point Defense Weapons. Multiplying the 48 ER Smalls by their damage of 5 produces a result of 240. Multiplying the 24 Small Pulse Lasers by their damage value of 3 equals 72. Adding this together gives a value of 312, and dividing it by 10 and rounding up gives the Conqueror PNT32. Additionally, it is capable of spaceflight (SPC).

STANDARD WEAPON HEAT-MODIFIED DAMAGE

Firing Arcs	Short	Medium	Long	Extreme
Nose	9	9	6	3
Fore Left/Fore Right	4	4	2	0
Left/Right Broadside	9	9	6	3
Aft Left/Aft Right	4	4	2	0
Aft	9	9	6	3

Determining Base Point Value

The *Conqueror* has a BV of 153,634, giving it a *BattleForce* Point Value of 1,536.

CONQUEROR-CLASS BATTLECRUISER/CARRIER

Stat	Value
TP	3
Capital Damage	*(S/M/L/E)*
Nose	131/131/131/0
FL/FR	14/14/14/14
LBS/RBS	142/142/142/17
AL/AR	14/14/14/14
Aft	23/23/23/0
Capital Missile Damage	*(S/M/L/E)*
Nose	1/1/1/1
FL/FR	—/—/—/—
LBS/RBS	1/1/1/1
AL/AR	—/—/—/—
Aft	—/—/—/—
Standard Damage	*(S/M/L/E)*
Nose	9/9/6/3
FL/FR	4/4/2/0
LBS/RBS	9/9/6/3
AL/AR	4/4/2/0
Aft	4/4/2/0
Size Class	2
Armor-T/Structure	359-36/46
Point Value	1,536
Specials	AT100D8, CT14.2D1, CAP, DT2, HPG, KF, LF, MAR45, MSL, PNT32, SPC

STANDARD WEAPON CONVERSION TABLE — INNER SPHERE

Weapon	Heat	Damage* Short	Medium	Long	Extreme	Notes
Direct Fire Ballistic Weapons						
Autocannon/2	1	1.32	2	2	2	
Autocannon/5	1	3.75	5	5	—	
Autocannon/10	3	10	10	—	—	
Autocannon/20	7	20	20	—	—	
Light Gauss Rifle	1	6	8	8	8	
Gauss Rifle	1	12.45	15	15	—	
Heavy Gauss Rifle	2	16.5	20	10	—	
LB 2-X AC	1	0.69	1.05	1.05	1.05	Flak Weapon
LB 5-X AC	1	2.36	3.15	3.15	—	Flak Weapon
LB 10-X AC	2	6.3	6.3	6.3	—	Flak Weapon
LB 20-X AC	6	12.6	12.6	—	—	Flak Weapon
Light AC/2	1	2	2	2	—	
Light AC/5	1	5	5	5	—	
Light Machine Gun	0	1	—	—	—	Point Defense Weapon
Machine Gun	0	2	—	—	—	Point Defense Weapon
Heavy Machine Gun	0	3	—	—	—	Point Defense Weapon
Nail/Rivet Gun	0	0.5	—	—	—	
Rotary AC/2	6	8	8	8	—	
Rotary AC/5	6	20	20	—	—	
Ultra AC/2	2	2.25	3	3	3	
Ultra AC/5	2	6.23	7.5	7.5	—	
Ultra AC/10	8	15	15	15	—	
Ultra AC/20	16	30	30	—	—	
Direct Fire Energy Weapons						
ER Large Laser	12	8	8	8	—	
ER Medium Laser	5	5	5	—	—	
ER Small Laser	2	3	3	—	—	Point Defense Weapon
Flamer	3	2	—	—	—	Heat/Point Defense Weapon
Flamer (Vehicle)	3	2	—	—	—	Heat Weapon/Point Defense Weapon
Large Laser	8	8	8	—	—	
Medium Laser	3	5	5	—	—	
Small Laser	1	3	—	—	—	Point Defense Weapon
Plasma Rifle	10	10	10	—	—	Heat Weapon
Light PPC	5	3.75	5	5	—	
PPC	10	7.5	10	10	—	
Heavy PPC	15	11.25	15	15	—	
ER PPC	15	10	10	10	—	
Snub-Nose PPC	10	10	5	—	—	
Pulse Weapons						
Large Pulse Laser	10	9.9	9.9	—	—	
Medium Pulse Laser	4	6.6	6.6	—	—	
Small Pulse Laser	2	3.3	—	—	—	Point Defense Weapon
Missile Weapons						
LRM 5†‡	2	1.5/2	3/4	3/4	—	
LRM 10†‡	4	3/4	6/8	6/8	—	
LRM 15†‡	5	4.5/6	9/12	9/12	—	
LRM 20†‡	6	6/8	12/16	12/16	—	
MML 3†‡	2	4/4	3/3	2/2	—	
MML 5†‡	3	6/8	5/6	3/4	—	
MML 7†‡	4	8/12	6/9	4/6	—	
MML 9†‡	5	12/14	8/11	6/7	—	
MRM 10†‡	5	5.7/6	5.7/6	—	—	
MRM 20†‡	6	11.4/12	11.4/12	—	—	
MRM 30†‡	10	17.1/18	17.1/18	—	—	
MRM 40†‡	12	22.8/24	22.8/24	—	—	
Rocket Launcher 10	3	0.6	0.6	0.6	—	
Rocket Launcher 15	4	0.9	0.9	—	—	
Rocket Launcher 20	5	1.2	1.2	—	—	
SRM 2†‡	2	2/4	2/4	—	—	
SRM 4†‡	3	6/6	6/6	—	—	
SRM 6†‡	4	8/10	8/10	—	—	
Streak SRM 2†‡	2	4	4	—	—	
Streak SRM 4†‡	3	8	8	—	—	
Streak SRM 6†‡	4	12	12	—	—	

*For missile weapons, the first value is damage from standard launchers, while the second is augmented damage from Artemis IV FC; for MRM launchers the first value is standard damage and the second is augmented damage from Apollo FCS.
†Available as a One-Shot System
‡Available as an Improved One-Shot System

ADVANCED WEAPON CONVERSION TABLE — INNER SPHERE

		Damage*				
Weapon	**Heat**	**Short**	**Medium**	**Long**	**Extreme**	**Notes**
Direct Fire Ballistic Weapons						
Heavy Flamer	5	4	4	—	—	Heat
ER Flamer	4	2	2	—	—	Heat
Improved Heavy Gauss Rifle	2	16.5	22	22	—	
MagShot Gauss	1	2	2	—	—	
Silver Bullet Gauss	1	7.84	9.45	9.45	—	
Light Rifle	1	3	3	—	—	
Medium Rifle	2	5.52	6	—	—	
Heavy Rifle	4	7.47	9	9	—	
Hyper-Velocity AC/2	1	1.5	2	2	2	
Hyper-Velocity AC/5	3	5	5	5	5	
Hyper-Velocity AC/10	7	10	10	10	10	
Direct Fire Energy Weapons						
Binary Laser (Blazer) Cannon	16	12	12	—	—	
Bombast Laser	12	10.2	10.2	—	—	
Light PPC w/Capacitor	5	3.75	5	5	—	
PPC w/Capacitor	10	5.63	7.5	7.5	—	
Heavy PPC w/Capacitor	15	7.5	10	10	—	
ER PPC w/Capacitor	15	7.5	7.5	7.5	—	
Snub-Nose PPC w/Capacitor	10	7.5	5	—	—	
Pulse Weapons						
Variable Speed Laser, Small	3	5.75	3.15	—	—	
Variable Speed Laser, Medium	6	10.35	5.25	—	—	
Variable Speed Laser, Large	14	12.65	7.35	—	—	
X-Pulse Laser, Small	3	3.3	3.3	—	—	Point Defense Weapon
X-Pulse Laser, Medium	6	6.6	6.6	—	—	
X-Pulse Laser, Large	14	9.9	9.9	—	—	
Missile Weapons						
Enhanced LRM 5‡	2	2.25/3	3/4	3/4	—	
Enhanced LRM 10‡	4	4.5/6	6/8	6/8	—	
Enhanced LRM 15‡	5	6.75/9	9/12	9/12	—	
Enhanced LRM 20‡	6	9/12	12/16	12/16	—	
Extended LRM 5‡	3	1	3	3	3	
Extended LRM 10‡	6	1.5	6	6	6	
Extended LRM 15‡	8	2.5	9	9	9	
Extended LRM 20‡	12	3	12	12	12	
'Mech Mortar-1	1	0.85	1.7	1.7	—	
'Mech Mortar-2	2	0.85	1.7	1.7	—	
'Mech Mortar-4	5	2.55	5.1	5.1	—	
'Mech Mortar-8	10	4.25	8.5	8.5	—	
Thunderbolt-5	3	2.9	5	5	—	
Thunderbolt-10	5	5.8	10	10	—	
Thunderbolt-15	7	8.7	15	15	—	
Thunderbolt-20	8	11.6	20	20	—	

*For missile weapons, the first value is damage from standard launchers, while the second is augmented damage from Artemis IV FC.
†Available as a One-Shot System
‡Available as an Improved One-Shot System

STANDARD WEAPON CONVERSION TABLE — CLAN

		Damage*				
Weapon	**Heat**	**Short**	**Medium**	**Long**	**Extreme**	**Notes**
Direct Fire Ballistic Weapons						
LB 2-X AC	1	0.69	1.05	1.05	1.05	Flak Weapon
LB 5-X AC	1	2.36	3.15	3.15	—	Flak Weapon
LB 10-X AC	2	6.3	6.3	6.3	—	Flak Weapon
LB 20-X AC	6	12.6	12.6	—	—	Flak Weapon
AP Gauss Rifle	1	3	3	—	—	
Gauss Rifle	1	12.45	15	15	—	
HAG 20	4	13.28	12	12	—	Flak Weapon
HAG 30	6	19.92	18	18	—	Flak Weapon
HAG 40	8	26.56	24	24	—	Flak Weapon
Light Machine Gun	0	1	—	—	—	Point Defense Weapon
Machine Gun	0	2	—	—	—	Point Defense Weapon
Heavy Machine Gun	0	3	—	—	—	Point Defense Weapon
Nail/Rivet Gun	0	0.5	—	—	—	
Ultra AC/2	2	2.49	3	3	3	
Ultra AC/5	2	7.5	7.5	7.5	—	

STANDARD WEAPON CONVERSION TABLE — CLAN (CONTINUED)

Weapon	Heat	Damage* Short	Medium	Long	Extreme	Notes
Direct Fire Ballistic Weapons, continued						
Ultra AC/10	6	15	15	15	—	
Ultra AC/20	14	30	30	—	—	
Direct Fire Energy Weapons						
ER Large Laser	12	10	10	10	10	
ER Medium Laser	5	7	7	—	—	
ER Small Laser	2	5	5	—	—	Point Defense Weapon
ER Micro Laser	1	2	—	—	—	Point Defense Weapon
Flamer	3	2	—	—	—	Heat/Point Defense Weapon
Flamer (Vehicle)	3	2	—	—	—	Heat/Point Defense Weapon
Heavy Large Laser	18	15.2	15.2	—	—	
Heavy Medium Laser	7	9.5	9.5	—	—	
Heavy Small Laser	3	5.7	—	—	—	Point Defense Weapon
Plasma Cannon	7	10	10	10	—	Heat Weapon
ER PPC	15	15	15	15	—	
Pulse Weapons						
Large Pulse Laser	10	11	11	11	—	
Medium Pulse Laser	4	7.7	7.7	—	—	
Small Pulse Laser	2	3.3	3.3	—	—	
Micro Pulse Laser	1	3.3	—	—	—	Point Defense Weapon
Missile Weapons						
ATM 3	2	6	4	2	2	
ATM 6	4	15	10	5	5	
ATM 9	6	21	14	7	7	
ATM 12	8	30	20	10	10	
LRM 5†‡	2	3/4/4.2	3/4/4.2	3/4/4.2	—	
LRM 10†‡	4	6/8/8.4	6/8/8.4	6/8/8.4	—	
LRM 15†‡	5	9/12/12.6	9/12/12.6	9/12/12.6	—	
LRM 20†‡	6	12/16/16.8	12/16/16.8	12/16/16.8	—	
SRM 2†‡	2	2/4/4.2	2/4/4.2	—	—	
SRM 4†‡	3	6/6/6.3	6/6/6.3	—	—	
SRM 6†‡	4	8/10/10.5	8/10/10.5	—	—	
Streak SRM 2†‡	2	4	4	—	—	
Streak SRM 4†‡	3	8	8	—	—	
Streak SRM 6†‡	4	12	12	—	—	

*For missile weapons, the first value is damage from standard launchers, the second is augmented damage from Artemis IV FC, and the third is damage augmented by Artemis V.
†Available as a One-Shot System
‡Available as an Improved One-Shot System

ADVANCED WEAPON CONVERSION TABLE — CLAN

Weapon	Heat	Damage* Short	Medium	Long	Extreme	Notes
Direct Fire Ballistic Weapons						
ProtoMech AC/2	1	2	2	2	—	
ProtoMech AC/4	1	4	4	—	—	
ProtoMech AC/8	2	8	8	—	—	
Rotary AC/2	6	8	8	8	8	
Rotary AC/5	6	20	20	20	—	
Direct Energy Ballistic Weapons						
Chemical Laser, Small	1	3	—	—	—	Point Defense Weapon
Chemical Laser, Medium	2	5	5	—	—	
Chemical Laser, Large	6	8	8	—	—	
Improved Heavy Laser, Small	3	6	—	—	—	Point Defense Weapon
Improved Heavy Laser, Medium	7	10	10	—	—	
Improved Heavy Laser, Large	18	16	16	—	—	
Pulse Weapons						
ER Pulse Laser, Small	3	5.25	5.25	—	—	
ER Pulse Laser, Medium	6	7.35	7.35	—	—	
ER Pulse Laser, Large	13	10.50	10.50	10.50	—	
Missile Weapons						
Streak LRM 5‡	2	5	5	5	—	
Streak LRM 10‡	4	10	10	10	—	
Streak LRM-15‡	5	15	15	15	—	
Streak LRM 20‡	6	20	20	20	—	
Streak LRM (ProtoMech)††	1	1	1	1	—	
'Mech Mortar 1	1	0.85	1.7	1.7	—	
'Mech Mortar 2	2	0.85	1.7	1.7	—	
'Mech Mortar 4	5	2.55	5.1	5.1	—	
'Mech Mortar 8	10	4.25	8.5	8.5	—	

*For missile weapons, the first value is damage from standard launchers, the second is augmented damage from Artemis IV FC, and the third is damage augmented by Artemis V.
†Available as a One-Shot System
‡Available as an Improved One-Shot System
††Per tube

BATTLE ARMOR WEAPONS & EQUIPMENT CONVERSION TABLE — CLAN

Weapon	Damage Short	Medium	Long	Notes
Direct Fire Ballistic Weapons				
"Bearhunter" Superheavy AC	3	—	—	
Heavy Grenade Launcher	1	—	—	
Light Recoilless Rifle	2	2	—	
Medium Recoilless Rifle	3	3	—	
Heavy Recoilless Rifle	3	3	—	
Direct Fire Energy Weapons				
Flamer	2	—	—	
Support PPC	2	2	—	
ER Pulse Laser, Small	5.25	5.25	—	
ER Pulse Laser, Medium	7.35	7.35	—	
Missile Weapons				
Advanced SRM 1	2	2	—	
Advanced SRM 2	4	4	—	
Advanced SRM 3	4	4	—	
Advanced SRM 4	6	6	—	
Advanced SRM 5	6	6	—	
Advanced SRM 6	8	8	—	
LRM 1	1/1	1/1	1/1	
LRM 2	1/2	1/2	1/2	
LRM 3	2/2	2/2	2/2	
LRM 4	3/3	3/3	3/3	
LRM 5	3/4	3/4	3/4	
SRM 1	2/2	2/2	—	
SRM 2	2/4	2/4	—	
SRM 3	4/4	4/4	—	
SRM 4	6/6	6/6	—	
SRM 5	6/8	6/8	—	
SRM 6	8/10	8/10	—	

WEAPON CONVERSION TABLE — ARTILLERY

Weapon	Heat	Damage S	M	L	E	Notes
Artillery						See *Artillery*, p. 285
Arrow IV (IS)	10	N/A	N/A	N/A	N/A	
Arrow IV (Clan)	10	N/A	N/A	N/A	N/A	
Arrow IV (Homing)	10	N/A	N/A	N/A	N/A	
Thumper	6	N/A	N/A	N/A	N/A	
Sniper	10	N/A	N/A	N/A	N/A	
Long Tom	20	N/A	N/A	N/A	N/A	
Cruise Missile/50	50	N/A	N/A	N/A	N/A	
Cruise Missile/70	70	N/A	N/A	N/A	N/A	
Cruise Missile/90	90	N/A	N/A	N/A	N/A	
Cruise Missile/120	120	N/A	N/A	N/A	N/A	
Artillery Cannon						See *Artillery*, p. 285
Thumper	5	3.75	5	—	—	
Sniper	10	8.3	10	—	—	
Long Tom	20	13.2	30	30	—	

BATTLE ARMOR WEAPONS & EQUIPMENT CONVERSION TABLE — INNER SPHERE

Weapon	Damage S	M	L	Notes
Direct Fire Ballistic Weapons				
"Firedrake" Support Needler	1	—	—	
"David" Light Gauss Rifle	1	1	—	
"King David" Light Gauss Rifle	1	1	—	
Grand Mauler Gauss Cannon	1	1	—	
Magshot Gauss Rifle	2	2	—	
Tsunami Gauss Rifle	1	1	—	
Micro Grenade Launcher	1	—	—	
Grenade Launcher	1	—	—	
Light Mortar	2.76	—	—	
Heavy Mortar	2.49	3	—	
Light Recoilless Rifle	2	2	—	
Medium Recoilless Rifle	3	3	—	
Heavy Recoilless Rifle	3	3	—	
Direct Energy Ballistic Weapons				
Flamer	2	—	—	
Man-Portable Plasma Rifle	2	2	—	
Support PPC	2	2	—	
VSP, Small	5.75	3.15	—	
VSP, Medium	10.35	5.25	—	
Missile Weapons				
LRM-1	0.5/0.5	1/1	1/1	
LRM-2	0.5/1	1/2	1/2	
LRM-3	1/1	2/2	2/2	
LRM-4	1.5/1.5	3/3	3/3	
LRM-5	1.5/2	3/4	3/4	
MRM-1	0.95	0.95	—	
MRM-2	0.95	0.95	—	
MRM-3	1.9	1.9	—	
MRM-4	2.85	2.85	—	
MRM-5	2.85	2.85	—	
Rocket Launcher 1	0.1	0.1	—	
Rocket Launcher 2	0.1	0.1	—	
Rocket Launcher 3	0.19	0.19	—	
Rocket Launcher 4	0.29	0.29	—	
Rocket Launcher 5	0.29	0.29	—	
SRM-1	2/2	2/2	—	
SRM-2	2/4	2/4	—	
SRM-3	4/4	4/4	—	
SRM-4	6/6	6/6	—	
SRM-5	6/8	6/8	—	
SRM-6	8/10	8/10	—	

CONVERTING BATTLEFORCE TO BATTLETECH

Players can convert damaged *BattleForce* Elements back to *BattleTech* terms in order to make repairs or play out segments of the game at *BattleTech* scale. These conversions are useful for campaign play or when making use of the Maintenance, Repair, Salvage and Customization rules (see p. 166).

Elements considered destroyed in *BattleForce* are not necessarily destroyed in *BattleTech*. Therefore, players wishing to play at *BattleTech* scale or make repairs should convert both damaged and destroyed Elements. If the converted Element is truly destroyed in *BattleTech* terms (see p. 175), then it cannot be repaired (though a player may salvage components from it with which to repair other

NAVAL WEAPON CONVERSION TABLE

Weapon	Heat	Damage Short	Medium	Long	Extreme	Notes
Mass Drivers						
Light Mass Driver	30	54	54	54	—	
Medium Mass Driver	60	90	90	90	—	
Heavy Mass Driver	90	126	126	126	—	
Naval Autocannon						
NAC/10	30	10	10	10	—	
NAC/20	60	20	20	20	—	
NAC/25	85	25	25	25	—	
NAC/30	100	30	30	30	—	
NAC/35	120	35	35	—	—	
NAC/40	135	40	40	—	—	
Naval Gauss						
Light N-Gauss	9	15	15	15	15	
Medium N-Gauss	15	25	25	25	25	
Heavy N-Gauss	18	30	30	30	30	
Naval PPCs						
Light N-PPC	105	7	7	7	—	
Medium N-PPC	135	9	9	9	9	
Heavy N-PPC	225	15	15	15	15	
Naval Lasers						
NL35	52	3.5	3.5	3.5	—	
NL45	70	4.5	4.5	4.5	4.5	
NL55	85	5.5	5.5	5.5	5.5	
Capital Missiles						
Killer Whale	20	4	4	4	4	
White Shark	15	3	3	3	3	
Barracuda	10	2	2	2	2	
AR-10	15	3*	3*	3*	3*	
Kraken-T	50	10	10	10	10	
Killer Whale-T	20	4	4	4	4	
White Shark-T	15	3	3	3	3	
Barracuda-T	10	2	2	2	2	
Sub-Capital Weapons						
Light Sub-Capital Cannon	12	2	2	2	—	
Medium Sub-Capital Cannon	30	5	5	—	—	
Heavy Sub-Capital Cannon	42	7	7	—	—	
Sub-Capital Lasers						
SCL/1	24	1	1	1	—	
SCL/2	28	2	2	—	—	
SCL/3	32	3	3	—	—	
Sub-Capital Missiles						
Piranha	9	3	3	3	—	
Stingray	12	3.5	3.5	—	—	*Damage is calculated as a White Shark missile.
Swordfish	15	4	—	—	—	
Manta Ray	21	5	—	—	—	

damaged Elements). To convert an Element from *BattleForce* to *BattleTech* terms, players will need a copy of the Unit's *BattleTech* record sheet.

Because the conversion rules represent an approximation at best, each conversion results in a loss of detail, and so it is recommended that players do not convert Units back and forth between *BattleForce* and *BattleTech* more than once. In general, conversions should be handled as follows. Convert a *BattleTech* Unit to *BattleForce* and use it to play *BattleForce*. When you want to shift to *BattleTech* scale, convert it back to *BattleTech* terms. Play it in *BattleTech* for as long as you want, but repair it before converting it back to *BattleForce* terms. It is easier to accurately convert a repaired Unit back to *BattleForce* terms for a new fight.

ARMOR

First, for each point of *BattleForce* armor damage the Element has suffered, apply 30 points of *BattleTech* damage in 5-point groups using the Front (or Nose) column of the Hit Location Table. This damage does not harm internal structure or inflict critical hits. Damage that would normally have affected the internal structure transfers to the armor in the next section as though the internal structure in the affected location had been eliminated. Damage that cannot transfer is lost.

Randomly choose a ProtoMech or battle armor suit for each 5-point group.

STRUCTURE

Once armor damage has been converted, structure damage is converted. For each point of *BattleForce* structure damage the Element has suffered, apply 20 points of *BattleTech* damage in 5-point groups. This damage affects armor and structure, just like normal *BattleTech* damage, meaning that if structure damage is applied to a section that still has armor, it must first eliminate the armor in that section before damaging the internal structure. However, it cannot inflict critical hits

unless the Element was destroyed in *BattleForce* terms (all of its structure boxes crossed off on the *BattleForce* record sheet). If the Element was destroyed, check for critical hits per standard rules upon conversion. Otherwise, apply critical hits according to the rules below. Any damage that would destroy the Element is lost (including damage that would create 3 Engine hits) unless the Element was also destroyed in *BattleForce* terms.

If a battle armor Element has one point of structure damage eliminate the most damaged member first, then the next most damaged, etc. until half the squad (rounded down) has been eliminated. If a battle armor Element has two points of structure, it is destroyed in TW terms. Infantry Elements with one point of structure damage are also destroyed in *Total Warfare* terms.

AEROSPACE ELEMENTS

Divide the Element's BattleTe*ch* SI by the number of *BattleForce* structure points it has, and round down. For each point of structure damage, mark off the same number of SI points. For example, an Element with an SI of 16 would have 2 points of structure in *BattleForce*. Each structure hit would eliminate 8 points of SI when converting the Element (16 ÷ 2 = 8).

PROTOMECHS

Randomly determine a ProtoMech for each 5-point group and roll a hit location normally. If the hit eliminates the last ProtoMech in the Point, ignore the damage.

CRITICAL HITS

If an Element suffers *BattleForce* critical hits, convert those hits directly to *BattleTech* terms even if the Element was subsequently destroyed in *BattleForce* terms.

For BattleMechs, most of the effects of these critical hits are applied at random. To determine the specific slots that suffer a critical hit, roll repeatedly on the appropriate BattleMech Hit Location Table until the result indicates a location that contains the appropriate item. Then roll for a critical hit in that location until the result indicates a hit on an appropriate slot. Apply the critical hit to that slot only.

Crew Hit: Applies to DropShips and Small Craft only. Mark off 2 crew boxes for the first Crew Hit. Mark off all crew boxes for the second Crew Hit.

Crew Killed: Applies to vehicles and aerospace fighters. Mark off all crew boxes.

Docking Collar Hit: Applies to DropShips and Small Craft only. The Docking Collar hit is marked off.

Door Hit: Applies to DropShips and Small Craft only. One randomly determined bay door is marked off per hit.

Engine Hit: For 'Mechs, randomly assign one critical hit to the engine for the first hit. Randomly assign two more critical hits (for a total of three) to the engine for the second hit.

For vehicles, mark off a Vehicle Engine hit.

For DropShips and Small Craft, mark off two engine boxes per hit.

Fire Control Hit: For 'Mechs, each Fire Control hit is allocated as a shoulder hit, two arm actuators or one sensor hit. Roll 1D6. On a result of 1–3, randomly allocate two arm actuator hits. On a result of 4–5, randomly allocate a shoulder hit. On a result of 6, randomly allocate a sensor hit.

For ProtoMechs, roll 1D6 for each hit. On a 1–5 result, mark off a randomly determined arm hit. On a result of 6, mark off a head hit.

For vehicles, mark off two sensor boxes for each Fire Control hit.

For aerospace fighters, conventional fighters, DropShips and Small Craft, mark off 1 sensor and 1 FCS box for each fire control hit.

Head Blown Off: The Element suffers the effects of a Head Blown Off critical hit (see pp. 126-127, *TW*).

KF Boom: Applies to DropShips and Small Craft only. The KF Boom hit is marked off.

MP Hit: For 'Mechs, randomly assign leg critical hits until the 'Mech's current Walking MP is reduced by half (rounded down).

For ProtoMechs, apply a leg hit for each MP hit.

For vehicles, the first hit is the equivalent of a roll of 10 on the Motive Systems Damage Table. All subsequent hits are the equivalent of a roll of 8 on the Motive Systems Damage Table (see p. 193, *TW*).

Proto Destroyed: Eliminate one ProtoMech at random.

Thruster Hit: Applies to aerospace Elements. Two thrusters on each side are marked off.

Weapon Hit: For DropShips and Small Craft, the first weapon hit eliminates the bay with the highest damage potential (if there is a tie, determine randomly). Subsequent hits eliminate the bay with next highest damage potential (again, determine randomly in the event of a tie). The affected arc is determined randomly.

For all other Units, the first weapon hit eliminates the weapon with the highest damage potential (if there is a tie, determine randomly). Subsequent hits eliminate the weapon with next highest damage potential (again, determine randomly in the event of a tie). Eliminate 50 percent of the weapon critical hit locations (round down; for example, a weapon with three critical hit locations would lose one) and do not check for explosions for weapon types that might explode.

Lara is going to convert her damaged BGS-1T Barghest *to* BattleTech *stats. After a particularly vicious battle, the* Barghest *lost all of its armor and 2 points of structure. It took one weapon hit and one MP hit. Lara multiplies the BattleForce armor damage (5) by 30 to get a result of 150. She will have to roll a total of 30 5-point hits on the* Barghest. *Lara rolls her 30 hit locations and gets 11, 5, 7, 6, 3, 6, 7, 7, 4, 7, 8, 6, 8, 10, 3, 7, 2, 5, 10, 5, 7, 4, 11, 7, 6, 9, 7, 4, 7 and 10. After applying the damage, her Barghest's stats are:*

	Internal Structure	*Armor Value*
Head:	*3*	*9*
Center Torso:	*22*	*0*
Center Torso (Rear):	*9*	
Left Torso:	*15*	*11*
Left Torso (Rear):	*6*	
Right Torso:	*15*	*1*
Right Torso (Rear):	*6*	
Left Front Leg:	*15*	*2*
Right Front Leg:	*15*	*2*
Left Rear Leg:	*15*	*11*
Right Rear Leg:	*15*	*21*

Twenty points of damage were lost because they hit the center torso after it had already lost all of its armor, meaning they had nowhere to transfer to. Next, Lara applies damage to the Barghest*'s internal structure. It took 2 points of structure damage in* BattleForce*, which equates to 40 points (2 x 20) in* BattleTech *stats. As with the armor damage, this structure damage is allocated in 5-point groups. Lara rolls 8 locations: 7, 8, 6, 6, 9, 6, 9 and 10. After applying this damage, her* Barghest*'s stats are:*

	Internal Structure	*Armor Value*
Head:	*3*	*9*
Center Torso:	*17*	*0*
Center Torso (Rear):	*9*	

Left Torso:	*15*	*6*
Left Torso (Rear):	*6*	
Right Torso:	*1*	*0*
Right Torso (Rear):	*6*	
Left Front Leg:	*12*	*0*
Right Front Leg:	*15*	*2*
Left Rear Leg:	*15*	*11*
Right Rear Leg:	*15*	*11*

Had Lara rolled another Right Torso hit for the structural damage, that damage would have been lost, as the result would have destroyed the Barghest *in* BattleTech *terms by creating 3 Engine hits.*

Now Lara needs to convert the BattleForce *critical hits to* BattleTech *critical hits. The first critical hit is a weapon hit. Lara's* Barghest *has 2 ER Large Lasers and 1 LB 20-X Autocannon. The LB 20-X is the weapon with the most damage potential, so it is eliminated. The weapon occupies 11 critical hit locations, so Lara marks off 5 of those locations. For the second critical hit, an MP critical, Lara rolls 2D6 and gets a 5. Consulting the Hit Location Table, she sees this is a Right Rear Leg hit. Next she rolls 1D6 and gets a 1, indicating a Hip critical hit. As this critical hit reduces the* Barghest*'s MP by half, she is finished allocating MP critical hits.*

The damaged Barghest *is now ready for* Total Warfare *game play.*

CONVERTING BACK TO BATTLEFORCE

Damaged *BattleTech* Units can be converted to *BattleForce* terms in the same way as converting custom Units. Use the actual amount of armor remaining after damage instead of the Unit's original Armor Factor. If the Unit suffered any critical damage, convert the damage into *BattleForce* terms as described below.

Ammunition

Do not count lost ammunition when calculating how many shots each ammo-using weapon can fire. If a weapon has no ammunition, do not count the damage it would normally do when figuring *BattleForce* Damage Values.

Arm and Shoulder Actuators

If weapons are mounted in the affected arm, treat the Unit as though it has suffered one *BattleForce* fire control hit for every two damaged actuators (or fraction thereof).

Arm Destroyed

Do not count weapons and equipment in the destroyed arm when figuring *BattleForce* Damage Values.

Docking Collar

Apply a Docking Collar hit.

Door

Apply an equivalent number of Door hits.

Engine

One Engine critical hit directly converts to one *BattleForce* Engine critical hit. Two or more Engine critical hits render the Unit destroyed in *BattleForce* terms.

Gyro

One Gyro hit converts to a *BattleForce* MP hit. If the gyro has been destroyed, that Unit has zero MP.

Heat Sinks

Do not count destroyed heat sinks when calculating heat modifications for *BattleForce* Damage Values.

Jump Jets

Recalculate the Element's Jumping MP as described in *Converting BT Elements to BattleForce* (see p. 355).

KF Boom

Apply a KF Boom hit.

Leg/Hip/Foot Actuator

Use the Unit's modified MP when calculating *BattleForce* MP.

Leg Destroyed

A humanoid Unit with a destroyed leg has only 1 MP in *BattleForce*, and one with both legs destroyed has 0 MP. Four-legged 'Mechs have movement reduced by half for each leg destroyed: that is, a quarter of normal if two legs are destroyed and an eighth of normal if three are destroyed.

Motive Systems Damage

Use the reduced MP when converting the Element to *BattleForce* statistics.

Sensors/FCS

'Mechs: Convert a single Sensor critical hit to a *BattleForce* Fire Control hit. A 'Mech with two Sensor hits can only make physical attacks in *BattleForce*.

Vehicles: Convert every two Sensor critical hits to a *BattleForce* Fire Control hit.

Aerospace Fighters/Conventional Fighters/DropShips/Small Craft: Total the number of Sensor and FCS hits and divide by 2 (round up). Apply this number of Fire Control hits to the Element.

Special Abilities

When converting a damaged Element to *BattleForce* statistics, all required equipment must be fully functional to confer special abilities. If an Element has all the requisite equipment, but some of it is not functional, it does not get the associated special ability.

Thrust Points Lost

Use reduced thrust when converting the Element to *BattleForce* statistics.

Thruster Hit

If four or more thruster boxes (total) are marked off, apply a *BattleForce* Thruster hit.

Weapons

If a weapon is destroyed, do not add the damage it can do to the total damage when figuring *BattleForce* Damage Values.

two seconds of VENGEANCE

DAN C. DUVAL



ASTEROID E755-3C
PIRATES' HAVEN CLUSTER
PERIPHERY
8 FEBRUARY 3065

"Here's the plan," said Mustafa al-Tariq, placing an irregular lump of stone on a table in the rec room/mess/repair area. The rest of the room was filled to capacity with The Mahdi's Madmen. The stone appeared to be roughly carved into the shape of a good-sized transport ship.

Harad Rafiki watched Mustafa intently, trying to ignore all the other members of the group, and the shabbiness of the mess space.

In fact, this was now the only room on the base that did not have bunks in it, so it became the central room. The place had never looked so ragged before, never so close to collapsing and venting them all to the vacuum outside.

Then Harad focused his attention back on Mustafa, the man who had let Harad's own brother, Nariq, die.

They were tight on space because so many of the external seals were going bad and they could not come up with the lucre to replace them, and so many of the external areas on the base were sealed off to reduce the loss of volatiles.

And even here, in the one central area, half the lights either were not working or had been disconnected to save power, making the room gloomy. The ceiling was a tracery of pipes and cables, bypasses of failed systems or "temporary" replacements for them.

One could not say that The Mahdi's Madmen were successful pirates.

Mustafa wore his long leather duster, his personal signature, needlessly turning from side to side to make the lower edges flare out in a swirl. Mustafa-style.

The Pirates' Haven Cluster was a wonderful place to base out of, a bundle of stars far enough off the beaten track that the Great Houses had little reason to come out here, and

with enough asteroid surface area to support dozens—even hundreds—of pirate bands. Yet it lay only a single jump from the edges of the Federated Suns and the Taurian Concordat. A successful gang of pirates could live quite well out here, with little fear of the Feds or anyone else wanting to pick through the millions of asteroids and hundreds of planets trying to find any given pirate band. The odds of not being found were lopsided in the pirates' favor.

"This is the richest transport you've ever heard of," Mustafa said, tapping the rock on the table. Around his neck a small grenade dangled, catching sometimes on the ends of his long, dark braids. He had sworn he would never be taken alive. Mustafa always tried to live up to the romantic ideal of being a pirate.

"The Feds are not shipping ore, but refining in place and shipping *ingots*." He paused and looked around for effect. "Platinum, iridium, rubidium; all destined for industrial catalysts. Plus…" He poked his finger in the air for emphasis. "Gold and silver for electrical contacts, as well as ytterbium and ruthenium for superconductors."

Harad glared at Mustafa. This was all information that Harad's little net of spies had gathered. Mustafa would not know the difference between an industrial catalyst and a packet of instant tea.

Reaching into his pocket, Mustafa withdrew his fist and opened it slowly, to reveal a small lapis lazuli stone. Even from across the room, Harad could see that it was finely carved in the shape of one of the Madmen's *Stingray* fighters from First Group, mounted on a fine wire stand. That First Group's colors of blue and gold were well reflected by the gold-laced blue stone was no accident, even though it did not exactly match the First's color scheme. He might be a bastard, but Mustafa knew how to make a showing.

As the other pilots and crewmembers oohed and ahhed over the small carving, Mustafa said, "I have been carving these for some time." Then he pulled another from his pocket. Until he placed it on the table as well, Harad could not identify it, but once he got a look, he knew it had to be a *Stuka*, carved in some green stone with black inclusions, about the length of a man's finger. In the colors of Second Group, which Harad commanded.

His *Stuka*s would normally act as the premier fighter for the Madmen, but with no missile reloads and half their lasers down due to lack of parts, the heavy fighters, though still powerful, were not anywhere near their full potential.

Which was part of Mustafa's sin: even if Nariq had not survived, they should not have left Nariq's fighter behind. A hundred tons of salvage that might have provided replacement parts for the Second's *Stuka*s.

Not that Mustafa and his First Group would give a damn about *Stuka* parts.

One thing Harad agreed with Mustafa about, though: this transport had to be taken. They could not keep the transport itself—stealing valuables off the ship was one thing, but taking the entire vessel would create too much heat—so they would not be able to make use of the tons of liquefied volatiles aboard. They could use the oxygen, nitrogen, argon and even the methane, but the cryogenic tanks were simply too difficult to remove. They would have to leave them behind when they abandoned the transport.



Assuming they could take it in the first place.

Mustafa pulled one more stone from his pocket, this one gold. A gold *Stingray*, finger-length. The model's wings were enameled blue, with a gold star and crescent on each. Mustafa's own fighter.

"This will represent the Cobras," Mustafa said, setting the stone on its wire stand with the rest, "which I will personally lead."

The Cobras were their strike group. That it consisted of exactly three *Leopard*s—none of them with missiles, either—was a tribute to how far the Madmen had fallen since the early days. They had been selling off one after another of their original six *Leopard*s to keep themselves in food and spare parts. They had never had BattleMechs, so their *Leopard*s only carried skin infantry. Eight fighters and three transports, with one old, rickety JumpShip. Seventy-seven men and women (and twelve children they had never planned for, but which were probably inevitable), and that was the entirety of the Madmen.

Mad, indeed.

This Fed transport probably carried half again that many people all by itself, not to mention the two sections of fighters that would be escorting it.

Mustafa placed two slabs of plastic on the table, near the lump that represented the Fed transport. "Two sections of fighters, four fighters each."

With missiles, Harad added silently. Their lasers and guns will all work and have full ammunition loads.

The Madmen would have had an advantage at one time, if only a small one, but not now that Mustafa had let Nariq die. And so many others.

"The Feds have six sections at the processing base, but they won't choose which two sections to serve as escort until the last moment, so we may be facing two sections of light fighters or two of heavy fighters. Heard anything more, Harad?"

Startled at being called upon, Harad paused before shaking his head. "No. Except that they usually send the sections most in need of maintenance and refit, so the fighters may not be fully functional and the pilots may be tired from continual patrolling."

"And perhaps a little lax, yes?" Mustafa said, drawing eyes back to himself, where he wanted them. "They will assume that we will try to take the transport entire, and fly it away. So we will force them into deciding." He placed the lapis miniature some distance ahead of the stone and two plastic slabs.

"First Group will lie in wait, minimal power and emissions, but letting themselves be discovered. The Fed fighters will move toward them, maybe with one section, maybe with both, to investigate." He pushed one of the plastic slabs forward with a finger, then took up the First Group miniature and moved it away from the stone transport. "First Group will retreat, trying to draw them away, but darting forward and taking shots at them to keep them interested."

Mustafa looked around the room. "The goal is not to engage them closely, but to keep the Feds' attention on them, while…" He picked up the green and black Second Group model and the gold *Stingray* in the same hand, placing them behind the stone transport. "…The trap is sprung from behind."

He waved a hand and an image appeared on the wall behind him. Amid the star-flecked background of open space, a dull grey asteroid turned slowly, a dim light source making shadows crawl across its surface as it moved. "B354 dash 746 dot seven. About sixty trillion tons, mostly chondritic; hardly worth mining for anything. But!"

The image jerked forward and froze on a shadow-shrouded crater, the result of some ancient impact, given the smaller gouges the crater sported within.

Harad recognized it immediately, from the mission plan Mustafa had already sent to him. The asteroid would hide mass signatures, magnetic returns from metal, even the slight thermal and radio emissions of idling fighters and *Leopard*s. The crater was large enough for all of Second Group and the Cobras, with room to spare.

"We lie in wait until their attention is on First Group," Mustafa continued. "Once it is clear they are concentrating on our four mediums, we will launch from the asteroid at full thrust and drive into the Fed transport."

Mustafa edged the gold and the green-black model closer to the stone transport.

"Harad's heavy fighters only need to hold off the Fed fighters long enough for the Cobras to reach the transport and hook up."

Someone from back in the group called out. "There must be fifty or sixty soldiers on that transport, not to mention its crew."

"Yes!" Mustafa said, grinning. "Expecting us to penetrate the hull near the control bridge and fight our way there to take control, so we can take the ship away. So they will concentrate their forces near the front of the ship, with some others in the engine spaces behind the cargo bays."

"But we only want the cargo bays," Harad said, his voice a low rumble in comparison to Mustafa's high-pitched yips.

"Exactly," Mustafa said, apparently miffed that Harad had stolen his thunder. "We go in at the cargo bays and need only hold them at the edges long enough to transfer the ingots. We will need about twenty minutes to clear the bulk of the containers onto our *Leopard*s and then we are away, leaving the Feds torn between chasing us and protecting what remains of their cargo.

"Meantime, First and Second Groups engage the Fed fighters just enough to keep them off the Cobras' backs." He pushed both of the plastic slabs toward the transport stone, now pinned by the gold *Stingray*. "If they engage strongly toward the transport, First Group attacks them from the rear."

Mustafa pushed the blue and gold model toward the slabs.



"And you will be doing what?" Harad asked, looking directly at Mustafa.

Unperturbed, Mustafa nodded slowly. "I will engage the transport's defenses as the Cobras close, then keep them suppressed while we make the transfer." He looked back at Harad. "That should also keep them from shooting at your group from behind, too, eh?"

Exactly what Mustafa and Nariq had been doing when he left Nariq behind.

But at that time, Mustafa had pulled out two seconds early, leaving Nariq to the pursuing Fed fighters—which, of course had concentrated all their fire on the trailing raider.

The asteroid image on the wall shrank, while the view expanded to show more of the asteroid belt. At this scale, the asteroid where they would hide appeared at the edge of a rough tube through the belt, leading to a pulsing red dot that was meant to represent the jump point the transport intended to use to jump out of the system.

"You are sure, Mustafa," another voice called, "that this is the route they will use?"

Rather than answering, Mustafa looked to Harad. If it went wrong, let Harad take the blame. Of course.

"Yes," Harad said. "They use different routes each time, but our informant says this is the route they will use this time, due to disturbances in systems at the other end of their usual jump points."

"Once we have the cargo," Mustafa said, "the Cobras and Second Group will fall back directly to *The Prophet*."

The Prophet was their ancient and near-decrepit JumpShip. It, too, needed repair and refit.

"I have established three rendezvous points where First Group—and any stragglers—can gather to be picked up. I doubt the Feds will follow too far, given that they still have cargo to protect."

Mustafa looked around as voices began to buzz throughout the room. It was not the most detailed plan they had ever worked from, but had more details than many. And all of it would be included in their mission packets.

Before anyone could start asking questions, the recorded call to prayer sounded over the base's speakers. Too small a group to have their own imam, they had programmed the base's computer to announce each of the five daily prayer times. Immediately, people started filtering out of the room, to collect their prayer rugs and gather in whatever groups they preferred. Harad had placed his rolled rug on a table near the doorway through which he had entered the mess area, so he remained in the room.

Even Mustafa left, touching other members of the band on the arm or clutching at a hand, continuing the political part of the mission as he went to collect his own things.

Many other details were in the plan, including damaging the Fed transport enough that it would not be immediately able to move. Tying the Fed fighters to it, so they could not pursue the Madmen.

Mustafa, for all his faults as a man and as a Muslim, was an excellent tactical planner.

Many of the people would return to the main hall, to worship with the greater part of the group, as Harad always did, but for the moment he was alone.

Alone with Mustafa's models.

He picked up the gold *Stingray*. It was exquisite, carved in loving detail and painted with great patience.

The *Leopard*s had to reach the transport safely and be protected while they loaded the cargo. Even with their depleted array of weapons, Second Group had enough armor to hold on for a while, maybe even for the entire time needed.

They *had* to have this cargo. It would bring millions of C-bills, enough to make the base safe again. Sold to the Concordat or the Magistracy, their profits could buy missiles and replacement parts. Food. Medicine. Maybe even some luxuries.

Enough, anyway, that the Madmen could buy more time, putting off the day when they would have to abandon their base and try to join some other band of outlaws.

So they had to have the cargo. Nothing, not even Harad's revenge, could be allowed to jeopardize that.

But when they detached from the Fed transport, the *Leopard*s would pull away first, with Second Group providing cover as the transports turned and accelerated away, toward a series of waypoints that would prevent the Feds from tracking them back to *The Prophet*.

The plan called for Mustafa and the Second to wait ten seconds after the Cobras started their retreat, to follow them. Even that would open a large distance between the transports and the fighters, but it would give the relatively slow *Leopard*s the best chance to get away with their precious load.

But if the Second only waited eight seconds…

As usual when they retreated in formation, he would have the other *Stuka*s of the Second slave their systems to his, so he, Harad, would choose when they turned and retreated after the Cobras.

That would leave Mustafa two seconds behind them, between the Second and the pursuing Feds.

And if he set his fire control to automatic rather than manual, the two medium lasers in the rear of each Stuka would choose the closest target.

The closest target would be Mustafa's *Stingray*, only two seconds behind them.

An accident.

Regrettable.

But revenge for Nariq.

Harad replaced the gold model on the table, setting it between the Second and the two slabs that represented the Fed fighters.

A terrible accident.

They would have to leave the salvage for the Feds.

Harad tried to suppress a grin, but it came anyway. Even if Mustafa survived, the Feds would have him. And with them, Mustafa would be better off dead. If he survived the laser fire, then let the infidels deal with him. It would be what he deserved.

Harad might never find out if Mustafa was brave enough to use that grenade, but Mustafa would know. And Nariq. And Allah.

But the Madmen would live, better off for all that the cargo would bring them.

And better off for leaving Mustafa for the Feds.

Perhaps Mustafa would find some comfort in his memories of how he had left Nariq behind.

Harad nudged the model back into place.

Two seconds' difference.

A mere two seconds of vengeance.



A Lyran aerospace fighter makes a strafing run on the Odessan Planetary Guards' rear lines at the Battle of Odessa.

Miniatures Rules is a set of conversion rules that allows players to play *BattleTech* as a tabletop miniatures game (on 3-D terrain using rulers, and without the hex grid).

This rules set is divided into several sections that mirror the chapters found in *Total Warfare* (*TW*). Where a section either modifies or replaces a part of those rules, a page number is listed where the original rules can be found for further reference. The sections for *Heat*, *ProtoMechs* and *Combat Vehicles* have been excluded, as the particular rules in those sections are unmodified from *Total Warfare*.

Total Warfare: Please keep in mind that this is a set of conversion rules. *Total Warfare* is still needed to play, as an understanding of that rule set forms the basis for these rules adjustments.

Advanced Rules: The advanced movement and combat optional rules found in *Tactical Operation*s and in this rulebook go far beyond what can easily be played using miniatures rules and so are beyond the scope of these rules. Players wishing to add such advanced rules to their 3-D terrain play should use this section as a guideline when determining how best to include such optional rules. For example, a simple rule of thumb is that one hex equals two inches; this should allow many of the advanced rules—especially movement related—to be added to these rules with ease. All players should agree to the inclusion of any advanced rules—and the specific mechanics of how such rules will be added—before any play begins.

3-D TERRAIN VS. PAPER MAPS (P. 9)

As noted in *Total Warfare*, at its core *BattleTech* is a board game that uses codified movement and combat ranges within a hex grid. Miniatures rules are by necessity a bit more vague than the standard hex-based rules. The lack of hexes, and often of clearly delineated levels, means that players must sometimes use their own judgment to decide what rule applies, especially when determining line of sight. To ensure smooth game play, players are encouraged to be reasonable in their application of these rules. Given the nature of miniatures play, there will be times when both players disagree on a point. In these situations, instead of letting the game bog down in a series of arguments, simply roll a die to settle the dispute and move on with the game.

One thing to keep in mind about woods is that for simplicity, the *Total Warfare* rules assume that woods are 2 levels tall, which would be 2 inches. If you construct woods terrain to match this assumption, there is no problem, but if you use woods terrain templates with different-height trees, you will have to agree with your opponent(s) whether to use the trees as-is or assume that they are only 2 inches tall.

A NOTE ON SPORTSMANSHIP

Miniature gaming using 3-D terrain may at times require a higher level of cooperation and sportsmanship from its players than playing on hex-grid paper maps. Keep in mind that the ultimate goal of playing this game is not to win or lose, but for everyone to enjoy themselves in the spirit of friendly competition.

Resolving Disputes

From time to time, a dispute may arise over a misunderstood rule or a seemingly subjective call (for instance, whether or not one miniature has line of sight to another, or whether or not an attack hits the rear of a miniature and so on). The object is to keep the game moving and not bog down in a dispute. You may quickly discuss the problem, and consult the rules, or agree on a third party to solve the dispute. If the issue cannot be quickly resolved this way, each player should roll a die, re-rolling any ties. The player with the highest die roll result decides the outcome. If

the dispute is over a rule, make sure to consistently apply the ruling for the rest of the game. After the game, any questions that came up during play can be discussed and worked out for future games.

Sharing Information

Unless called for by a scenario, there is no hidden information when playing miniatures rules. Your opponent may ask permission to briefly see your record sheets at any point in the game, and you should oblige.

COMPONENTS (P. 20)

Unless otherwise noted, players use all the standard rules for *Components* as presented in *Total Warfare*.

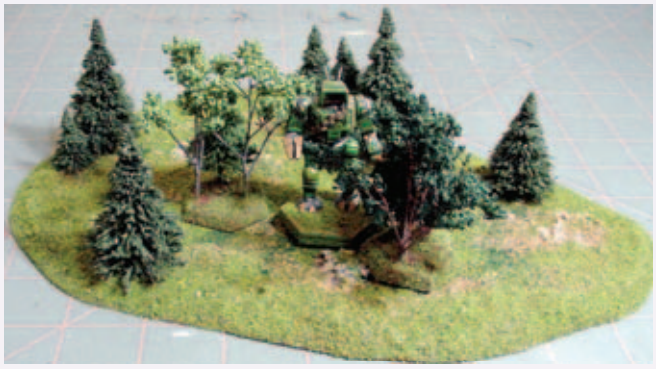
UNITS (P. 20)

The units, as described in the *Components* chapter of *Total Warfare*, are unchanged. However, instead of using non-miniature options as counters during game play, these rules assume players are using miniatures (whether the plastic miniatures from the *Classic BattleTech Introductory Box Set*, a metal miniature and so on).

In addition, units that have firing arcs should be mounted on hex bases. The hex base allows players to know which direction such units are facing for movement, weapons firing and receiving damage.

Infantry and Hex Bases (p. 23)

Infantry and battle armor units can do away with hex bases because these units have no firing arcs. Players can put their infantry on circular bases, washers or even on coins; doing so will not detract from a player's ability to use that unit. Players are encouraged to mount their conventional infantry platoons on discs or round bases that are up to 2 inches (50mm) in diameter to better represent the relative size of the platoon. Battle armor can be mounted on round discs or bases that are up to 1.25 inches (30mm) in diameter to better accommodate their size. (1¼ inch "fender washers," which have a small hole in the center, are found in most hardware stores and are excellent for this and inexpensive.) If using the *Representing Squad and Trooper Deployments* rules (see p. 397), players should mount their conventional infantry squads on discs or round bases that are up to 1 inch (25mm) in diameter, while battle armor troopers should be mounted on round 5/8-inch (16mm) bases. (As 5/8-inch bases are not commonly found, a small coin of roughly the same size should suffice.)



• WOODS TERRAIN TEMPLATE DIAGRAM •

MECHWARRIOR: DARK AGE AND AGE OF DESTRUCTION MINIATURES

Players who wish to use *MechWarrior*-scale miniatures with *BattleTech* rules and record sheets may do so using the rules found in this chapter with very little modification. However, without being mounted on a hexbase, facing changes and determining firing arcs and attack directions may be tricky. Players may create, print and cut out their own *MechWarrior*-sized hexes, or purchase hex bases from hobby suppliers, and affix their miniatures using double-sided tape or blue tack (or epoxy or cyanoacrylate glue for a more permanent bond). All non-infantry, non-DropShip units should use 2.5" hex bases; infantry may retain their *MechWarrior* base, but should use the *Representing Squad and Trooper Deployments* rules (see p. 397).

NOTE: Because the rules presented here depend on the size of the miniatures in play for such things as LOS, there is no way to mix *BattleTech* and *MechWarrior: Dark Age/Age of Destruction* miniatures in the same game.

TERRAIN (MAPSHEETS P. 31 AND COUNTERS P. 33)

Terrain features, such as woods, are best used with templates: terrain mounted on a base, as shown in the photo at bottom left. This represents large areas of terrain that affect game play.

Water and fissures pose unique problems. Ideally, depths and sublevels are handled by using "built-up" terrain several inches thick to represent Level 0, with depths or sublevels carved into it. If such terrain is not available, players can once again use the template method, though this requires some compromise when figuring LOS.

Total Warfare contains a helpful section on preparing tabletop terrain (see p. 296, *TW*). Aside from scratch-building your own structures, many hobby companies produce buildings in scales that work with *BattleTech* miniatures. Both z-scale (1:220) and microscale/microarmor (1:300–1:285) are viable options. Iron Wind Metals produces a line of sci-fi structures in microscale, specifically for use with *BattleTech* miniatures.

PLAYING THE GAME (P. 36)

Unless otherwise noted, players use all the standard rules for *Playing the Game* as presented in *Total Warfare*.

A NOTE ON SCALE AND THE RULES (P. 36)

Because tabletop terrain increases the size of the playing area when compared to maps, players must modify relative scale. This means that all ranges and unit abilities on non-hexed terrain have to conform to a new scale where distances relate to that of normal *BattleTech* maps.

The standard hex in *BattleTech* represents 30 meters. Running games at true scale to *BattleTech* miniatures (approxi-

MEASUREMENT CONVERSION TABLE

1 HEX = 2 INCHES 1 MP = 2 INCHES OF MOVEMENT

mately 1:300 scale) means 1 inch would translate to 7.5 meters, which quickly becomes unwieldy. Therefore, these rules assume a compromise of 15 meters per terrain inch.

This conversion means that 1 hex equals 2 inches for purposes of ranges and movement. This also means that 1 Movement Point (MP) allows for 2 inches of movement. Both are summarized on the Measurement Conversion Table above.

Optional: 1 Hex = 1 Inch: Players either with a small playing area or those wanting to keep the conversion rules simple may instead opt to equate 1 hex to 1 inch. Anywhere the Miniatures Rules refers to ranges, distances, movement costs, and so on, refer to the original Total Warfare rules, and treat all references to hexes as inches.

LEVEL, ELEVATION, ALTITUDE (P. 43)

Because not all terrain pieces are made the same, players should use common sense when determining terrain levels. Normally, 1 inch of height is considered one level.

Elevation for airborne non-aerospace units is difficult to accurately display on the table-top, though it can still be accounted for easily with counters, "elevation dice" (a die with the face-up number representing the unit's current elevation) or simply written on the unit's record sheet. Regardless, elevation is synonymous with level; for example, a unit 5 elevations above the underlying terrain is 5 inches or 5 "levels" above that terrain.

GROUND MOVEMENT (P. 48)

Unless otherwise noted, players use all the standard rules for *Ground Movement* as presented in *Total Warfare*.

MOVEMENT BASICS (P. 48)

Movement Points for *BattleTech* units on non-hexed terrain are converted to inches of movement allowance at the rate of 2 inches for each 1 MP of Walking/Cruising, Running/Flanking and Jumping movement. See the Sample Movement Table below.

Movement cost through terrain has been modified to reflect the fact that hexes no longer represent terrain. Consult the Movement Cost Table (see p. 390). Movement cost (how many inches of movement allowance is required to move) through terrain is determined per inch moved. Units account for this as soon as the unit's center of the base crosses the boundary and enters the terrain.

SAMPLE MOVEMENT TABLE

GRF-6CS GRIFFIN

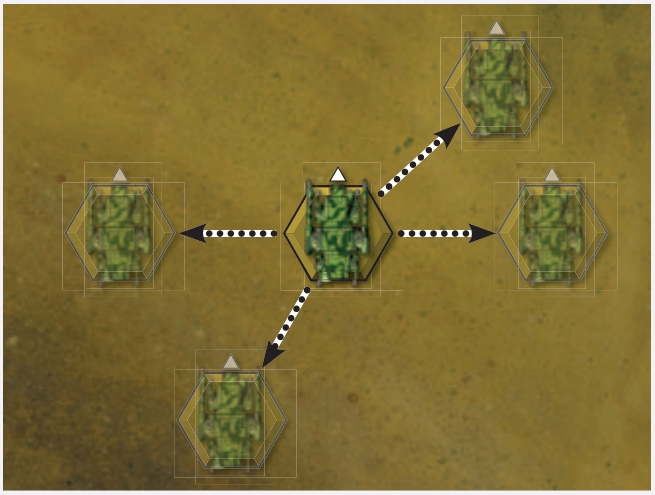
	Hex-Based Rules (MP)	Miniature Rules (Inches)
Walking	5	10
Running	8	16
Jumping	5	10

Level Change (p. 48)

When a unit comes in contact with the slope of a hill terrain piece that will take it to a different level the movement cost can be expended at any point along the path of movement on the slope, but the latest it can be done is when the miniature's center of the base crosses the edge of the different level. If the unit does not have enough movement allowance remaining at that point, it must stay at the previous level and cannot move any further.

Minimum Movement (p. 49)

This rule functions as presented in *Total Warfare;* a unit may move up to 2 inches forward using the Minimum Movement rule.



• LATERAL SHIFT MOVEMENT DIAGRAM •

Lateral Shift (Four-legged 'Mechs Only) (p. 50)

Four-legged 'Mechs may move in *any* direction without changing facing. If they move in any direction other than directly forward or backward, they must pay the extra lateral movement cost (see Movement Cost Table, p. 390).

The Lateral Shift Diagram above shows just a few examples of lateral-shift movement. In the diagram, the four-legged 'Mech has opted to move laterally 2 inches, expending 4 inches of movement (a distance of 2 inches moved, plus 2 inches paid for lateral-shift movement).

FACING (P. 50)

Changing a unit's facing costs 1 inch of movement per 30 degrees (1/2 a hexside) or fraction thereof. Facing is still relevant despite the lack of hexes on the terrain board. A unit's facing helps determine LOS and movement allowance in the same fashion as when using maps.



• FACING CHANGE DIAGRAM •

Front facing for 'Mechs is determined by the hexside on the base, where both feet point (poses on some miniatures may make it wise for players to agree to what is the "front" before play begins). For vehicles, the front of the vehicle determines which hexside represents the front. Because infantry and battle armor have no facing, this rule does not apply to those units.

Facing Change (p. 50)

'Mechs and vehicles can only move directly forward, following a line drawn from the front hexside, or directly backward, following a line drawn from the unit's back hexside. Changing movement direction requires a change in facing.

In the Facing Change diagram (see p. 388), a player wants to move the BattleMech from Point A to Point B. However, the BattleMech is currently facing Point C, and so cannot legally move to Point B. If the BattleMech changes its facing, as shown in Figure 2, it can legally move to Point B. This facing change costs 3 inches of movement (90 degree turn, at a cost of 1 inch per 30 degrees).

In the Movement Basics Diagram at right, the BattleMech at Point A has 10 inches of Walking movement or 16 inches of Running movement available. The controlling player declares that the BattleMech will walk this turn.

It costs 9 inches of the BattleMech's available movement to change facing one full hexside to the left (2"), move forward 5 inches while crossing over a Level 1 level (2") and end its move at Point B.

It costs 12 inches for the BattleMech to move to Point C: change facing 1 half-hexside to the left (1"), change facing again a fraction of a hexside to the left, to directly face Point C (1"), and move straight forward 6 inches while climbing two levels (4"). As this move costs more than the Walking allotment of the BattleMech, the controlling player cannot make it.

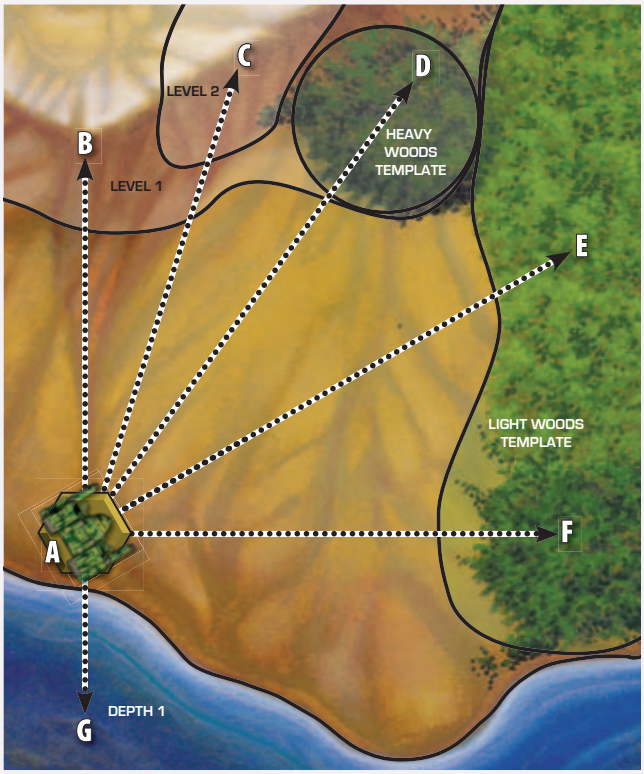
Likewise, the controlling player cannot move the BattleMech to Point D by walking. Doing so would require 13 inches of movement: change facing one half-hexside to the left (1"), then move straight forward 6 inches while climbing one level (2"), and entering 2 inches' worth of heavy woods (4").

The 'Mech can make it to Point E, moving straight forward 8 inches while passing through 1 inch of light woods (1") before arriving at Point E for a total of 9 inches used. Similarly, the 'Mech can reach Point F by spending 9 inches of movement: change facing one half-hexside to the right (1"), then move straight forward 6 inches, while paying the cost for moving through 2 inches of light woods (2").

Finally, the BattleMech can turn two hexsides to the right (4"), and then move forward 2 inches into the Depth 1 water, taking into account the additional 1 inch cost per inch moved in Depth 1 water (2"), and requiring an additional 2" cost for the level change (for a total of 10" used). As noted on the Movement Cost Table, however, the controlling player would need to immediately make a Piloting Skill roll to avoid falling after entering the water.

JUMPING (P. 53)

Jumping is little changed from *Total Warfare*. Use the following formula to determine if a piece of terrain or building is too high to jump over: (jump movement allowance in inches ÷ 2) + the height of the terrain on which the unit begins its movement = the maximum height the unit can jump over. The unit can go around the obstructing terrain, if applicable. A jumping unit must still take the shortest path possible.



• MOVEMENT BASICS DIAGRAM •

STACKING (P. 57)

Obviously, a unit cannot occupy the same physical space as another unit. To reflect this reality, units are prohibited from ending their movement in any location where another unit already exists. Because table-top play does not use hexes, opposing and friendly units can be in base-to-base contact with any other friendly or enemy unit. When this happens, physical (see p. 396; and p. 144, *TW*) and swarm attacks (see *Anti 'Mech Attacks,* p. 399; and p. 220, *TW*) can occur between opposing units. If the players wish, swarming infantry units can be placed on another unit's base whenever the infantry begin their attack via base-to-base contact with the target.

Units can still move through other friendly units, but must end their move in an empty space. Units cannot move through enemy units. Infantry are an exception in that they can "flow around" other units; however, they still may not end their movement in an occupied space.

Units can move through terrain as long as the terrain movement rules permit, but if the unit cannot physically fit in the terrain at the end of its movement, its player should place the unit on top of the terrain (such as on the roof of a building) and/or leave a marker of some kind to show its location. In these situations, patience and creativity will be required on both players' parts to resolve combat for these units sitting out of their actual location on the board. Any additional ter-

MOVEMENT COST TABLE (P. 52)

Movement Action/Terrain Type	Cost Per Inch of Terrain	Prohibited Units
Cost to Move 1 Inch	1″	
Terrain Cost When Entering Any New Hex		
Clear	+0″[6]	Naval Vessel
Paved/Bridge	+0″[15]	Naval Vessel
Road	+0″[3,15]	Naval Vessel
Rough	+1″	Wheeled, Naval Vessel
Light Woods	+1″[10]	Wheeled[9], Hover, VTOL[12], WiGE[12], Naval Vessel
Heavy Woods	+2″[11]	Vehicles[12], Naval Vessel
Water		
Depth 0	+0″	Naval Vessel
Depth 1	+1″[1] (Level change cost not included)	Infantry[14], Vehicles[4,7]
Depth 2+	+3″[1] (Level change cost not included)	Infantry[14], Vehicles[4,7], IndustrialMechs[8]
Level Change (up or down)		
1 level	+2″ ('Mechs, VTOLs, Subs, ProtoMechs) +4″ (Infantry, Ground Vehicles)	—
2 levels	+4″ ('Mechs, VTOLs, Subs)	Infantry, Ground Vehicles, WiGE[13], ProtoMechs
3+ levels	+2″/level (VTOLs, Subs)	'Mechs, ProtoMechs, Infantry, Ground Vehicles, WiGE[13]
Rubble	+1″[1]	Wheeled, Naval Vessel
Light Building	+1″[2]	VTOL, WiGE, Naval Vessel
Medium Building	+2″[2]	VTOL, WiGE, Naval Vessel
Heavy Building	+3″[2]	VTOL, WiGE, Naval Vessel
Hardened Building	+4″[2]	VTOL, WiGE, Naval Vessel
Additional Movement Actions		
Lateral Movement (Quad 'Mechs only)	+1″ (for any non-forward or non-backward movement)	
Facing Change	1″/30 degrees[5]	
Dropping to the Ground ('Mech only)	2″	
Standing Up ('Mech only)	4″/attempt	

[1] Cost to move along the bottom of a water area or rubble; Piloting Skill roll required every 2 inches to prevent falling.
[2] Piloting Skill roll required to prevent damage; infantry pays only 1 inch (except mechanized infantry, which pays 2 inches) to enter any building.
[3] If traveling along road; otherwise, cost of underlying terrain.
[4] Hovercraft may enter all water areas along the surface and may enter such areas using Flanking movement.
[5] No cost for infantry.
[6] If a wheeled Support Vehicle lacks the Off-Road Vehicle Chassis and Controls Modification, then movement costs 1 additional inch per inch traveled.
[7] Wheeled or tracked Support Vehicles with the Amphibious Chassis and Controls Modification can move through any water area on the surface at a cost of 2 inches per inch moved (see p. 56, *TW*).
[8] IndustrialMechs can enter Depth 2 or greater water. However, the IndustrialMechs must mount a fuel cell, fission or fusion power plant and must mount the Environmental Sealing Chassis and Controls Modification to do so. If the IndustrialMech does not meet those requirements, it is considered destroyed if it remains in Depth 2 or greater water (or prone in Depth 1 water) in the End Phase of the turn immediately following the turn in which the 'Mech entered it.
[9] Wheeled Support Vehicles with the Monocycle or Bicycle Chassis and Controls Modification can enter light woods.
[10] Infantry pays only 1 inch (except mechanized infantry, which pays 2 inches) to enter light woods.
[11] Infantry pays only 2 inches (except mechanized infantry, which pays 3 inches) to enter heavy woods.
[12] VTOL and WiGE vehicles can enter a woods area provided their elevation is higher than the level of the woods.
[13] This only applies to WiGE units entering an elevation higher than the unit's current elevation; see *Wing-In-Ground-Effect*, p. 55, *TW*, for rules governing entering elevations lower than the unit's current elevation.
[14] Infantry can enter water of Depth 1 or deeper if they have UMU movement.
[15] Ground vehicles moving on pavement may receive a total movement bonus of 2 inches, regardless of whether the vehicle uses Cruising or Flanking movement. To gain the extra movement, the unit must begin its turn on a paved surface and continue to travel on pavement for the entire Movement Phase.

PILOTING/DRIVING SKILL TABLE (CHANGES ONLY) (P. 60)

Situation	Modifier
Unit Actions	
'Mech entered Depth 1 water area[1]	–1
'Mech entered Depth 2 water area[1]	0
'Mech entered Depth 3+ water area[1]	+1
'Mech entered rubble area[1]	0
Special Cases	
MechWarrior trying to avoid damage when his 'Mech is falling	+1/inch fallen[2]
IndustrialMech trying to avoid critical damage when falling	+1/inch fallen[2]
Skidding Movement	
Inches moved in turn	
Less than 6"	–1
At least 6"	0
At least 10"	+1
At least 16"	+2
At least 22"	+4
At least 36"	+5
50" or more	+6
Building Movement[3]	
Unit entering/leaving Light building	0
Unit entering/leaving Medium building	+1
Unit entering/leaving Heavy building	+2
Unit entering/leaving Hardened building	+5
Inches moved in turn	
Less than 6"	0
At least 6"	+1
At least 10"	+2
At least 14"	+3
At least 20"	+4
At least 36"	+5
50" or more	+6

[1]Per 2 inches (or fraction thereof) of movement through this terrain type.
[2]For purposes of falling, a 'Mech only rises 1 inch above the underlying terrain.
[3]To avoid damage only. Does not result in a fall if Piloting Skill roll fails (see p.166, *TW*). Add a +1 modifier if unit is charging or being charged (in addition to the +2 modifier normally required in that situation).

rain rules related to where the unit has moved or is moving through (such as entering and moving through a building, or through a woods template) still apply.

MAKING PILOTING/DRIVING SKILL ROLLS (P. 59)

If a player must make multiple Piloting/Driving Skill rolls to pass through terrain, the rolls are made for every 2 inches (or fraction thereof) of movement. For example, if a 'Mech is moving through 5 inches of Depth 1 water, the player must make 3 Piloting Skill rolls: first when the 'Mech enters the water, next after 2 inches of movement, then finally after 4 inches of movement.

MOVEMENT ON PAVEMENT (P. 61)

Ground vehicles moving on pavement may receive a total movement bonus of 2 inches, regardless of whether the vehicle uses Cruising or Flanking movement. To gain the extra movement, the unit must begin its turn on a paved area and continue to travel on pavement for the entire Movement Phase.

When checking to see if a unit skids, use the converted Skidding Movement section of the Piloting/Driving Skill Table at left. A unit skids a number of inches equal to how far it has moved, divided by 2 (rounded up). A 'Mech takes damage equal to one-half its normal falling damage, rounded up, for each 2 inches (or fraction thereof) that it skids.

Collisions (p. 62)

Collisions with buildings or other units may occur, if at any point in a skid the skidding unit comes into base-to-base contact with a building or another unit; follow the collision rules from *Total Warfare* (see pp. 62-66, *TW*) and the converted Charge Attacks rules (see p. 396).

Sideslipping (p. 67)

A unit sideslips a number of inches equal to the Margin of Failure times 2. Sideslipping VTOL and WiGE vehicles that crash take damage from crashing on whatever side hit the terrain. The damage is equal to the number of inches the vehicle moved in that turn times its tonnage, divided by 20, rounded up. Divide the damage into 5-point Damage Value groupings and apply as normal.

Falling (p. 68)

A unit that falls from a higher level is assumed to have fallen 1 level for each inch (or fraction thereof) that it fell. After a unit is determined to have fallen, roll for fall facing and apply damage as normal. Laying the 'Mech miniature on its side risks damaging it, therefore players may mark the location of the fallen 'Mech with an empty hex base, a counter or a slip of paper that reads "Fallen" with an arrow to denote which direction the fallen 'Mech is facing.

AEROSPACE MOVEMENT (P. 74)

Unless otherwise noted, players use all the standard rules for Aerospace Movement as presented in *Total Warfare*.

ATMOSPHERIC MOVEMENT (P. 78)

Aerospace units in *Total Warfare* interact with ground units by moving directly on ground maps, or by moving on high- or low-altitude maps (and then interacting with the battle when they pass over it).

Aerospace Units on Ground Table (p. 91)

Using aerospace units on ground mapsheets under these conversion rules requires a minimum playing area of 6 feet squared (we suggest using open floor space as a gaming area). For those willing to tackle this type of game play, simply multiply the aerospace movement (and minimum straight

movement) as appropriate. That is, for every point of velocity, an aerospace unit must move 32 inches.

High-Altitude Table (p. 79)

The layout of the high-altitude map does not completely mesh with a miniatures table-top game. However, it can be played side by side with the table-top miniatures, using all the rules from *Total Warfare* as is, and switching to the conversion rules when attacking ground units or crashing.

Low-Altitude Table (p. 80)

The best way for aerospace units to participate in a miniatures conversion game is via low-altitude movement on a low-altitude table. Players can handle this in two ways: by using low-altitude hex maps, or by setting up a separate table for low-altitude terrain (see Low Altitude Table, below).

When using low-altitude hex maps, follow the rules exactly as found in *Total Warfare*. Designate one hex as the area in which the ground battle is taking place (or one hex for every 4 x 6-foot gaming area), and use the conversion rules only when interacting with the ground battle or when crashing.

If the players choose to set up their own table/area, they should apply all the movement rules in *Total Warfare*, with the following changes: a unit moves 2 inches for every point of effective velocity, and each altitude level (terrain and unit altitude) is equivalent to 1 inch. Use a 2 x 3-inch template to represent the table-top area where the ground battle is occurring.



• LOW ALTITUDE TABLE •

Landing and Lift-off (p. 87)

When applying terrain modifiers for a vertical landing (see p. 86, *TW*), use the predominant terrain under the miniature's hex base/footprint. If a DropShip lands vertically in an area that is not a paved road or water, the terrain within 2 inches of the DropShip's footprint is reduced by 1 level. Any building sections underneath are automatically reduced to rubble, while woods are automatically reduced to rough terrain.

Landing strips for horizontal landings must be 10 inches wide by 40 inches long for DropShips, 2 inches wide by 16 inches long for conventional fighters and Small Craft, and 2 inches wide by 10 inches long for fighters equipped with VSTOL. Aerodyne DropShips that attempt to reduce the landing distance must make a Control roll with a +4 modifier. If the roll succeeds, reduce the required landing distance by 4 inches for every point of the Margin of Success, to a minimum of half the standard landing distance. If the roll fails, consult the Failed Braking Maneuver Table (see p. 87, *TW*).

Aerodyne DropShips, fighters and Small Craft require a runway 40 inches long of clear or paved terrain in a continuous line that does not change levels in order to lift off. VSTOL-equipped units can take off from a runway half that length.

Proximity Damage (p. 88)

Any unit within a 14 inches of a spheroid unit as it lands or takes off suffers damage according to the DropShip Exhaust Damage Table below, broken into 5-point Damage Value groupings and applied using the appropriate hit location table. This damage only applies to units in the rear arc of an aerodyne DropShip when it takes off. Measure the radius from the absolute center of a spheroid DropShip, or from the rear of an aerodyne DropShip.

DROPSHIP EXHAUST DAMAGE TABLE

Distance	Damage
Within 2 inches	Destroyed
Up to 4 inches	12D6 damage
Up to 6 inches	10D6 damage
Up to 8 inches	8D6 damage
Up to 10 inches	6D6 damage
Up to 12 inches	3D6 damage
Up to 14 inches	2D6 damage

Crashes (p. 81)

When an aerospace unit crashes, use the rules as written in *Total Warfare*, but remember to use random movement conversion for forward movement during the crash (see *Out-of-Control Effects*, below).

Fighters, Small Craft and Fixed-Wing Support Vehicles: These unit types affect all units within 2" of the crash (called the crash zone, synonymous with the crash hex in *Total Warfare*). Center the 2" AoE Template on the crash to represent the crash zone. For a building section, apply the same amount of damage the aerospace unit received to the section's CF; a Hardened building section doubles the standard crashing damage applied to the aerospace unit.

DropShips: DropShips affect all units within the crash zone, but also affect units up to 4" away from the edge of the crash zone (called the outer crash zone, synonymous with the adjacent 6 hexes to the crash in *Total Warfare*). Use the footprint of the DropShip model (or the 6" AoE Template if no model is used) to represent the crash zone. Any building sections in the crash zone are automatically destroyed; a Hardened building section doubles the standard crashing damage applied to the DropShip. This is not cumulative; for example, if a DropShip crashes into three Hardened building sections, the damage remains only double, rather than six times the standard crash damage. Any unit in the crash zone or outer crash zone takes (or can avoid) damage as if it were in the target hex or in an adjacent hex, respectively (see *Avoiding or Taking Damage*, p. 82, *TW*). A unit partially within both zones is considered to be completely within the crash zone. All terrain within the crash zone is lowered by 2 levels (2 inches), while the terrain in the outer crash zone is lowered by 1 level (1 inch).

Woods and Water: Aerospace units that crash into woods reduce the terrain in the crash zone: heavy woods become light woods, and light woods become rough terrain. Regardless of the type of woods, a crashing DropShip reduces the woods in the crash zone and outer crash zone to rough terrain.

With the exception of DropShips, an aerospace unit that crashes into Depth 1 or greater water is automatically destroyed. If a DropShip crashes in predominantly Depth 1 water, the ship is immobile for the rest of the game. If a DropShip crashes in predominantly Depth 2 water, the DropShip is automatically destroyed.

Out-of-Control Effects (p. 92)

Convert any random movement effects as follows: aerospace units on a low-altitude table move forward 2 inches instead of 1 hex, or 2D6 inches on a ground table.

COMBAT (P. 98)

Unless otherwise noted, players use all the standard rules for *Combat* as presented in *Total Warfare*.

LINE OF SIGHT (P. 99)

Line of sight (LOS) in miniatures combat is a little different than in standard *BattleTech* game play. Because of the three-dimensional terrain, it is much easier to determine LOS on the board. Units can usually be sighted simply by going to the level of the firing unit and looking at the opposing miniature. If the opposing miniature can be seen, then the units have LOS to one another. When this is not possible, players must determine line of sight by running a straight measuring tape or a taut string from miniature to miniature.

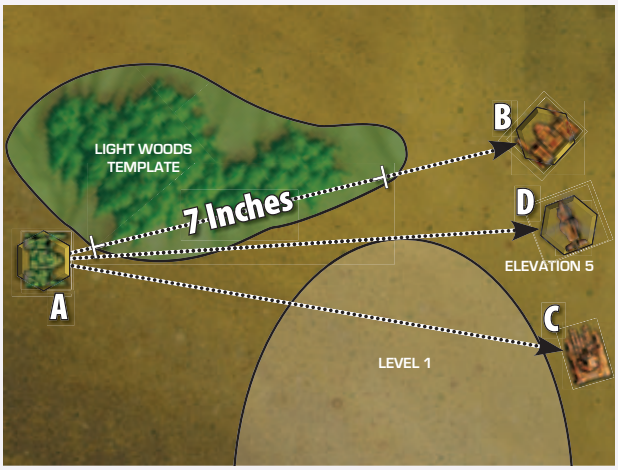
Woods do not block LOS as buildings and hills do. Determine the to-hit modifier from the intervening amount of heavy and/or light woods. The woods only block LOS if the to-hit modifier for the intervening woods is +3 or greater. If the attacker and target are on different levels, woods only intervene from within 2 inches of the attacker and defender along the LOS.

As stated in 3-D Terrain and Paper Maps (see p. 386), woods are assumed to be 2 levels (2") tall. If you use woods terrain with different-height trees, you will have to agree with your opponent(s) whether to use the trees as is or assume that they are only 2 inches tall.

In the Line Of Sight Diagrams at right, BattleMech A wants to target BattleMech B, so the controlling player goes down to the level of the miniature to check for LOS. The only thing he sees between A and B is a light woods template. He uses a measuring tape drawn between BattleMech A and BattleMech B to see how many inches of woods intervene. Seven inches of light woods intervene, blocking LOS between BattleMechs A and B.

The player controlling BattleMech A decides instead to target Ground Vehicle C. However, when he goes down to the minis' level to check LOS, he finds that LOS to Vehicle C is blocked by a low ridge.

BattleMech A's player then checks LOS to VTOL D. However, since VTOL D is at Elevation 5, he has to draw LOS to 5 inches above the table where the VTOL's hex base is located (elevation times 1 inch). While BattleMech A has a clear shot, the player must take into account the light woods that are within 2 inches, as they impose a firing penalty.





• LINE OF SIGHT DIAGRAMS •

Partial Cover ('Mech only) (p. 102)

Partial cover works slightly differently than in map-based games. Units still receive the +1 penalty for shooting at an opposing unit in partial cover, and any shots hitting the obscured areas are considered to have hit the intervening terrain instead. Under these conversion rules, however, units get partial cover not simply to the legs, but to any areas hidden behind the partial cover. For example, if a 'Mech is partially covered because its right side is behind a building, any shots that hit the 'Mech's right leg, right arm and right torso are considered to have hit the building.

Weapons firing from an attacking 'Mech behind cover may not be able to strike certain targets because the cover does not provide a clear line of fire. If the 'Mech has its torso twisted, turn the miniature temporarily one hexside in the twist direction, in order to determine if the weapons are clear or not. If a line cannot be drawn from the weapon, or the

hit location on the 'Mech containing the weapon, to the target without being blocked by the terrain providing cover to the attacking 'Mech, the weapon cannot be fired at that particular target. It may be fired at a secondary target, provided that the covering terrain does not block it from the secondary target. If a 'Mech is firing an indirectly guided weapon (such as indirect-firing LRMs), that weapon is not subject to the above restriction. Anti-missile systems located on a section of a targeted 'Mech that cannot draw a line to an attacker may not be employed against missile fire from the attacking unit, unless the 'Mech is being targeted indirectly by that attacker.

Elevated units also receive a partial cover penalty if they cannot see parts of a 'Mech adjacent to cover. For purposes of LOS, a unit that stops on an incline is considered to be on a level equal to the one it occupied before being placed on the slope. Woods do not create partial cover, but act as intervening terrain (see *LOS*, p. 393). Infantry, ProtoMechs and vehicles cannot benefit from partial cover. Firing downhill does not automatically negate partial cover—instead, players should go by visual LOS.

Terrain Note: When using sublevel templates as opposed to carved-out sublevels, players must rely on a little imagination and compromise. Figure LOS as normal, except that for every level below 0 on which a 'Mech stands, it is actually 1 inch deeper into the table. Depending on where the 'Mech is positioned, there may be partial cover or even blocked LOS. If no compromise can be reached, roll 1D6. On a result of 1–2, LOS does not exist between attacker and target; on a 3–4, the 'Mech has partial cover (legs only); on a 5–6, full LOS exists.

A 'Mech in Depth 1 water always has partial cover (legs only), regardless of whether the players use water templates or carved-out water terrain. Depth 2+ water completely blocks LOS unless both attacker and target are in Depth 2 water or lower. LOS is also blocked to a prone 'Mech in Depth 1 or deeper water.

In the Partial Cover Diagrams at right, a player wants to attack a target BattleMech. When dropping to the minis' level to check for LOS, as shown in Figure 1, the player sees that the target BattleMech has partial cover; its legs and left arm are hidden by the terrain. The player adds a +1 partial cover modifier to his target numbers, and any shots that hit the legs or left arm strike the cover instead. When the target BattleMech returns fire, the target BattleMech's controlling player cannot use the 'Mech's left-arm mounted weapon, because it is behind cover. However, because he declared a torso twist, as shown in Figure 2, he can temporarily turn his miniature 1 full hexside in the direction of the twist, to see if its left arm clears the cover. It does, and so the target BattleMech can now use its left-arm weapon when returning fire.

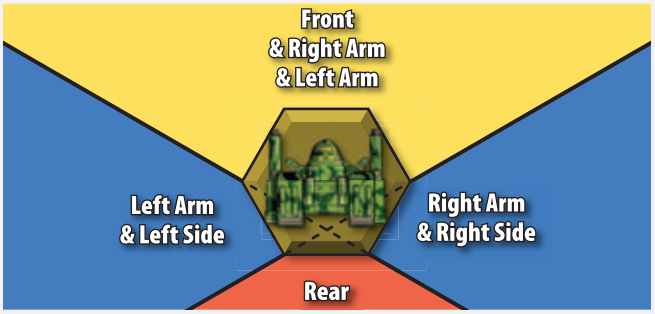
FIRING ARCS (P. 104)

Firing arcs are only slightly modified from *Total Warfare*, as shown in the Firing Arcs Diagram at left. The arcs are easy enough to discern using the unit's hex base, by lining a straightedge from a side point to the opposite rear point of the hex base.

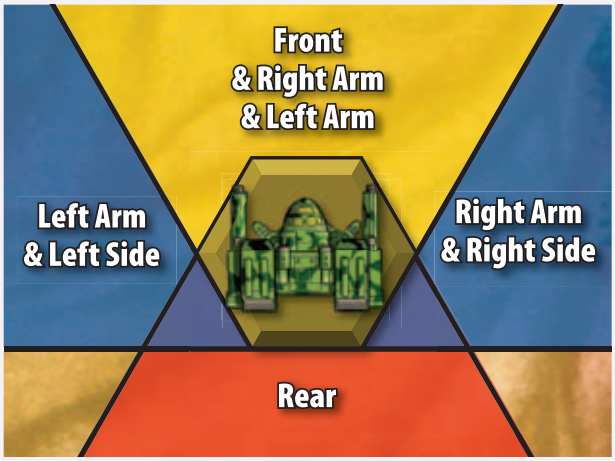
Optional: Simplified Firing Arcs: Alternatively, players may use these simplified firing arcs which can be determined by laying a straightedge along the sides of the miniature's hex base. These firing arcs do not precisely correspond to standard Total Warfare firing arcs, but may be easier to use.



• PARTIAL COVER DIAGRAMS •



• FIRING ARCS DIAGRAM •



• SIMPLIFIED FIRING ARCS DIAGRAM •

ATTACK MODIFIERS TABLE (CHANGES ONLY, P. 117)

All Attacks: Weapons and Physical	Modifier
Attacker	
Terrain (modifiers are cumulative)	
Light Woods	+1 per 2 inches intervening; +1 if target is in Light Woods
Heavy Woods	+1 per 1 inch intervening; +2 if target is in Heavy Woods
Partial Cover	+1; see *Partial Cover*, p 393
Target *(modifiers are cumulative)*	
Prone	–2 from up to 1 inch away, +1 from farther away
Distance Moved	
Moved less than 6″	+0
Moved at least 6″	+1
Moved at least 10″	+2
Moved at least 14″	+3
Moved at least 20″	+4
Moved at least 36″	+5
Moved 50″ or more	+6
Weapon Attacks Only	
Range and Terrain	
Minimum range (in inches)	(([Minimum Range] – [Range to Target]) / 2, round down) + 1
Each Intervening Section/Level between Attacker and Target (as well as target's section) in same multi-section building	+1 per section/level (Maximum +3; see Combat Within Buildings, p. 175, *TW*)

FIRING WEAPONS (P. 106)

Just as scale from maps to a terrain board is multiplied by 2, so are weapon ranges. This means that each weapon's short, medium and long ranges are multiplied by 2 when determining their range in inches. Ranges are also measured from the edge of the attacker's base to the edge of the target's base, or the edge of the terrain feature being shot at, see Sample Weapon Table, below. See www.classicbattletech.com for a list of already converted weapons for ease of use with Miniatures Rules play.

SAMPLE WEAPON TABLE

Item	Minimum Range	Short Range	Medium Range	Long Range
Gauss Rifle	4″	Up to 14″	Up to 30″	Up to 44″

Penalties for attacker movement, walking/cruising, running/flanking and jumping are the same as in *Total Warfare*. Target penalties for movement, shooting through woods and minimum ranges are outlined in the Attack Modifiers Table (see above).

Base-to-Base Contact

Non-Infantry units may not make weapon attacks against targets with which they are in base-to-base contact (point-blank weapons are an exception; see p. 396).

Minimum Range Modifier (p. 107)

Players can use the following formula to determine the minimum range modifier when measuring in inches: (([Minimum Range in inches] – [Range to Target in inches]) / 2, round down) + 1 = Minimum Range Modifier.

Target Movement (p. 108)

Target movement modifiers are based on the total distance traveled, not the inches spent maneuvering.

Non-Aerospace Units Attacking Airborne Aerospace Units (p. 107)

Range from a non-aerospace unit (including grounded aerospace units) to an airborne aerospace unit depends on whether the target is operating on a low-altitude table or directly on a ground table. If the target is operating on a low-altitude table, range is based on the distance from the attacker to the exact center of his table. In addition, add 4 inches to the range for each altitude. For example, a fighter at Altitude 3 would add 12 inches to the range. If the target is moving directly on the ground table/area, range is based on the distance to the target. Again, add 4 inches to the range for each altitude.

In both instances, if the attacker also suffered an attack this turn by the targeted aerospace unit (meaning if the attack has been announced, even if it has yet to be resolved), the range to the target is considered 0. Also in both instances, weapon minimum ranges are not taken into account against airborne aerospace units.

Clearing Woods (p. 112)

When clearing woods, each attack on the woods affects an area 2 inches in diameter, centered on the spot targeted by the attack.

WEAPONS AND EQUIPMENT (P. 113)

Unless otherwise noted, the ranges of effects for equipment and weapons are translated into inches by multiplying their ranges by 2. Ranges are always measured from the edge of the unit's base.

AE: Area-Effect Weapon (p. 113)

Area-effect weapons damage all units that have half or more of their base covered by the template, the size of which varies. Weapons that would damage all units in the hex use a 2" circular template that is placed on the table as appropriate for the weapon. Weapons that would damage all units in the target hex and surrounding hexes use a 6" circular template that is placed on the table as appropriate for the weapon.

PDFs of damage templates are available at the *BattleTech* website for players to download, print and cut out, or players can purchase universal damage templates from hobby companies such as Litko (www.litkoaero.com).

PD: Point-Blank Weapon (p. 114)

Point-blank weapons can only be used against targets that are in base-to-base contact or the edge of whose base is within 2 inches of the attacking unit.

DESTROYING A UNIT (P.128)

BattleMechs and vehicles that are destroyed in any way other than an explosion (ammunition, engine or fuel explosion) are left on the table to mark an area considered rough terrain. (Players may feel free to replace the miniature with a template equal in size to the unit's base.) Any unit destroyed by an explosion is removed from the table.

PHYSICAL ATTACKS (P. 144)

Kick, punch and push attacks can only occur when two units are within a range of 1 inch (measured from the edge of the attacker's base to the edge of the target's base). The attacking unit must also have the target unit in the appropriate firing arc.

Club And Physical Weapon Attacks (pp. 145 and 146)

Club and physical weapon attacks can only occur when two units are within a range of 2 inches (measured from the edge of the attacker's base to the edge of the target's base). The attacking unit must also have the target unit in the appropriate firing arc.

Push Attacks (p. 147)

Units displaced by a push must move 2 inches in the direction of the push.

Charges and Death From Above Attacks (pp. 148-149)

Charges and Death From Above (DFA) attacks can only be completed if the attacker can move far enough to cover half or more of the target's base with the attacker's base, displacing the target from its position on the terrain board (this is different from other physical attacks in regard to range). Whether the attack is successful or not, the attacker will displace the target after the attack is made. If the attack succeeds, the target is displaced in the opposite direction from which the attack came; if the attack is unsuccessful, the target is displaced in a direction of its player's choosing. In either case, the target and the attacker end their movement adjacent to each other in base-to-base contact.

If a charge succeeds, both units take damage from the collision. Divide the attacker's tonnage by 10, multiply that number by the total inches the attacker moved, and then divide the result by 2, rounding up. Apply that damage in 5-point groupings to the target. The attacker takes damage as normal. Damage to attacker and target as the result of a DFA is resolved per *Total Warfare*.



• BUILDINGS DIAGRAM •

Different Levels (p. 150)

Units adjacent to each other but at different levels can conduct physical attacks as long as the difference is no more than 1 level (1 inch).

Unit Displacement (p. 151)

The rules for unit displacement are effectively the same as the *Total Warfare* rules except for the circumstances creating the displacement. Units that are the target of a charge or death from above attack have to have half or more of their base covered by the attacker's base to force the target's displacement. Units displaced by the domino effect will be shifted enough so that they no longer have any portion of their base covered by the displacing unit.

BUILDINGS (P. 166)

Buildings add a great deal to a *BattleTech* miniatures game, both in visual appeal and tactical possibilities. However, whether you have a full urban sprawl or a few modest structures, some finesse is required in order to use the full rules for buildings from *Total Warfare* on the table-top. In general it is unsafe to place a miniature on a building roof, whether you're simulating a unit on the roof or somewhere else in the building. Once a unit has entered or landed on a building, a counter or token should be placed on the building to keep track of the unit's level and location.

MULTI-SECTION BUILDINGS (MULTI-HEX BUILDINGS, P. 167)

Some table-top buildings are large enough to be congruous with multi-hex buildings. For every 2 inches squared (or fraction thereof) of a building's area, assign it one section. Players may number or name these sections as appropriate (for example, a building with two sections might have a front and a back; a building with four sections might have a north, south, east and west).

Sections within a building must be of the same type and CF, but each section tracks its own CF. When half or more of a building's sections are destroyed, the entire building collapses.

MOVEMENT EFFECTS (P. 167)

Follow the rules in *Total Warfare*, but use the converted tables for Movement Costs and Piloting/Driving Skill rolls found on pages 390 and 391, respectively.

COMBAT EFFECTS (P. 171)

When targeting a multi-section building, the attacker must declare which section he is targeting. Building sections block LOS to other building sections. In *Total Warfare*, any mention of a building hex can be substituted for a building section in table-top play for purposes of combat and LOS.

SUPPORT VEHICLES (P. 204)

Unless otherwise noted, players use all the standard rules for *Support Vehicles* as presented in *Total Warfare*.

CARRYING UNITS (P. 207)

Use the mounting and dismounting rules from *Total Warfare*, with the exception that in order to mount a vehicle, a unit must be in base-to-base contact with it.

INFANTRY (P. 212)

Unless otherwise noted, players use all the standard rules for *Infantry* as presented in *Total Warfare*.

CONVENTIONAL INFANTRY (P. 214)

Players may represent conventional infantry in one of two ways: as a whole platoon or by individual squads. The *Total Warfare* rules assume that conventional infantry operate as a whole platoon, necessitated by the abstraction of unit placement, terrain, lines of sight and so on by virtue of being a hex-map based game. That abstraction is gone with the miniatures rules, and so there is more possibility (and need) to allow flexibility in how conventional infantry are handled.

If players wish to follow the original rules as closely as possible (such as for tournaments), conventional infantry are handled as a platoon. The entire platoon is represented by conventional infantry on a 2-inch base. Movement costs due to terrain and combat are handled from the edge of the base just like any other unit.

Representing Squad and Trooper Deployments (Optional)

If players wish to add more realism and flexibility to infantry, instead of representing them as a single unit they can represent the unit as a string of conventional infantry squads or battle armor troopers. (Note**:** While this rule is similar to the Squad Deployment rule found on page 27 of *Tactical Operations*, it is a wholly separate rule that can be used apart from, or in conjunction with, the Squad Deployment rules.) Conventional infantry squads are represented by conventional infantry miniatures on a 1-inch base, while battle armor troopers are mounted on an approximately 5/8-inch base (see *Infantry and Hex Bases*, p. 387). Each squad/trooper is numbered so that the damage each one sustains can be easily tracked. The number of squads/troopers that make up the unit is based on whether the infantry are Inner Sphere or Clan, and whether the conventional infantry are jump infantry or not. If the conventional infantry are Inner Sphere, each platoon will be made up of 4 squads, unless they are jump infantry, in which case there are 3 squads. If the conventional infantry are Clan, each squad will be made up of 5 soldiers regardless of what type they are. Determine the number of troopers in each squad by dividing the number of troopers in the platoon (see p. 213, *TW*) by the number of squads, or consult page 147 of *TechManual* for a comprehensive breakdown. (If you are using the Conventional Infantry record sheet, use a pencil or pen to extend the dividing lines between the last trooper of one squad and the first trooper of the next squad, and mark the groups of troopers representing each squad on the sheet the same way as its corresponding model is marked.)

A platoon of conventional infantry can go from being represented by a 2-inch base platoon model to being represented by multiple squad models on 1-inch bases during the course of a game. Use the remaining number of troopers in the platoon in conjunction with the preceding paragraph to determine the number of squads that will be placed on the table. Remove the 2-inch base infantry platoon model and replace it with the appropriate number of squad models in the same location. All of the squad models must be touching at least two other squad models, if possible, and centered around wherever the center of the platoon model was. The opposite, where squad models are replaced with a single platoon model, may be done also, but only if the squads are from the same platoon and there are at least half the troopers in the platoon remaining. The squads being combined must be touching at least two other squads, if possible, and the center of the platoon model is placed at the point around which the squad models were placed.

Battle armor units can go from being represented by a standard-based unit model to being represented by the remaining individual troopers on approximately 5/8-inch bases during the course of a game. Remove the unit model and replace it with the individual troopers in a similar manner to conventional infantry.

While the actions of an infantry platoon/battle armor squad are based on what each squad/trooper does, the cohesion of the larger unit must be maintained. All of the squads/troopers that make up the unit *must* be in base-to-base contact with at least one other squad/trooper from the unit after its movement is complete. This means that if a squad/trooper moves more slowly than all the other squads/troopers in a unit be-

CONVENTIONAL INFANTRY RANGE MODIFIER TABLE (P. 215)

Weapon Type	Base-to-Base	Range in Inches (To-Hit Modifier)								
		Up to 2″	4″	6″	8″	10″	12″	14″	16″	18″
Rifle, Ballistic	–2	0	+2	+4	—	—	—	—	—	—
Rifle, Energy	–2	0	0	+2	+2	+4	+4	—	—	—
Machine Gun	–2	0	+2	+4	—	—	—	—	—	—
SRM	–1	0	0	+2	+2	+4	+4	—	—	—
LRM	–1	0	0	0	+2	+2	+2	+4	+4	+4
Flamer	–1	0	+2	+4	—	—	—	—	—	—

cause of terrain, or if a squad/trooper is separated from the others through some circumstance, then one or more of the squads/troopers must move in some way (without exceeding their movement allowance) so that after movement is complete, all of the squads/ troopers are touching at least one other from the unit, or the squads/troopers attempt to get closer to each other.

Conventional infantry platoon cohesion extends beyond how the platoon moves on the battlefield—whenever a platoon is transported in multiple armored personnel carriers (APCs), the entire remaining platoon must be transported, not just part of it. While the APCs need not be in base-to-base contact with each other while transporting the platoon, they must be close enough to allow the platoon to maintain cohesion while mounting and dismounting from the vehicles.

Each squad/trooper has the same movement allowance that the unit would have, but each squad/trooper uses its movement allowance separately. Each squad/trooper can move where it wants and as it needs to, provided that at the end of movement all the squad/trooper models in the unit are touching at least one other from the unit per unit cohesion (mentioned above).

When resolving conventional infantry attacks, assume that all the squads in the platoon will fire on the same target. Add together the number of soldiers in each participating squad to determine the number of troopers attacking. If all the squads have the same range and terrain attack modifiers, the attack resolution proceeds per the normal rules. If different squads have different to-hit numbers due to range and/or terrain, the process is reversed: Figure out the to-hit number for each squad, make a single attack roll for the entire platoon, compare that attack roll to the to-hit numbers for each squad, determine which squads hit and then add together the number of troopers in each hitting squad to determine the number of troopers for damage resolution.

When resolving battle armor attacks, assume all the troopers in the squad will fire on the same target. If all the troopers have the same range and terrain attack modifiers, the attack resolution proceeds per the normal rules. If different troopers have different to-hit numbers due to range and/or terrain, the process is reversed: Figure out the to-hit number for each trooper, make a single attack roll for the entire squad, compare that attack roll to the to-hit numbers for each trooper, determine which troopers hit and then conduct damage resolution as normal.

In certain situations, players will find it desirable (or necessary) for different squads/troopers in a unit to attack different targets (ranged or close combat). The rules remain the same as above, except that whichever part of the unit has the lower numbers of soldiers firing at a target suffers the +1 Secondary Target to-hit modifier to represent the confusion inherent when different squads/troopers do different things. (If two or more "larger" groups with equal numbers of troopers are attacking, the controlling player determines which group does not suffer the Secondary Target modifier.) If the squad(s)/troopers suffering the Secondary Target modifier are attacking a target in base-to-base contact or an enemy 'Mech within its physical attack range, the Secondary Target modifier does not apply.

When an infantry platoon/battle armor squad attacks a target, the whole platoon must make the same type of attack, either a ranged fire attack or an anti-'Mech/swarm attack. (Squads/troopers will not make different types of attacks on the same target for fear of friendly fire.) When an infantry platoon/battle armor squad is attacking two or more enemy units, they may make different types of attacks.

Attacking Conventional Infantry Squads: Each squad can be targeted individually with weapons that are not Anti-Infantry (AI) designated. Non-AI weapons determine range, LOS, and to-hit modifiers to the targeted squad as per standard rules. Anti-Infantry (AI) designated weapons may attack the entire conventional infantry platoon. If different squads have different to-hit numbers then determine the to-hit number to attack each squad. Then make one attack roll for the weapon and compare it to the various to-hit numbers for the squads in the platoon and apply damage only to those whose to-hit number has been met.

Applying Damage to Conventional Infantry Squads: For weapons that are not designated as Anti-Infantry (AI) all of the damage is applied to the squad that was attacked, with any excess damage going to another squad in base-to-base contact that could have been hit also, at the attacker's discretion. For weapons that are designated as AI the infantry controlling player applies the damage to the platoon or affected squads that were attacked.

Attacking and Damaging Battle Armor Troopers: If every trooper in the squad has the same to-hit number then the attack proceeds per standard rules. (Remember the +1 to-hit modifier for non-infantry attacking battle armor squads.) If different troopers in the squad have different to-hit numbers then determine the to-hit number to attack each trooper, make one attack roll for the weapon attack, and compare it to the various to-hit numbers for the troopers in the squad. Those whose to-hit number has been met may be selected by a D6 die roll to be damaged by the attack. Apply damage per standard rules.

INFANTRY COMBAT (P. 214)

Infantry follow the rules in *Total Warfare*, but multiply their weapon ranges by 2. Consult the table for conventional infantry weapon range modifiers.

ANTI-'MECH ATTACKS (P. 220)

Infantry must be in base-to-base contact with a unit in order to make a leg or swarm attack. Though any number of infantry stands may be in base-to-base contact with a target unit, that unit may only be targeted for one type of attack per turn (provided the attack type is allowed for the unit in question).

INFANTRY CARRIERS (P. 223)

In order to mount an infantry carrier, the infantry unit must be in base-to-base contact with the carrier. When dismounting, the infantry are placed anywhere on the table in base-to-base contact with the carrier. If there is not enough room for the infantry to be base-to-base with the carrier, or the surrounding terrain is prohibited for that infantry type, the infantry cannot dismount.

AEROSPACE UNITS (P. 234)

Unless otherwise noted, players use all the standard rules for *Aerospace Units* as presented in *Total Warfare*.

ATMOSPHERIC COMBAT (P. 241)

Rules in this section assume that the aerospace units are operating directly on the ground table or on a low-altitude table. If the aerospace units are operating on hex maps, use the rules found in *Total Warfare*, except when the aerospace units are interacting with the ground battle. Keep in mind that weapon ranges on a low-altitude table are multiplied by 2 to determine inches, or by 32 if playing directly on the ground table.

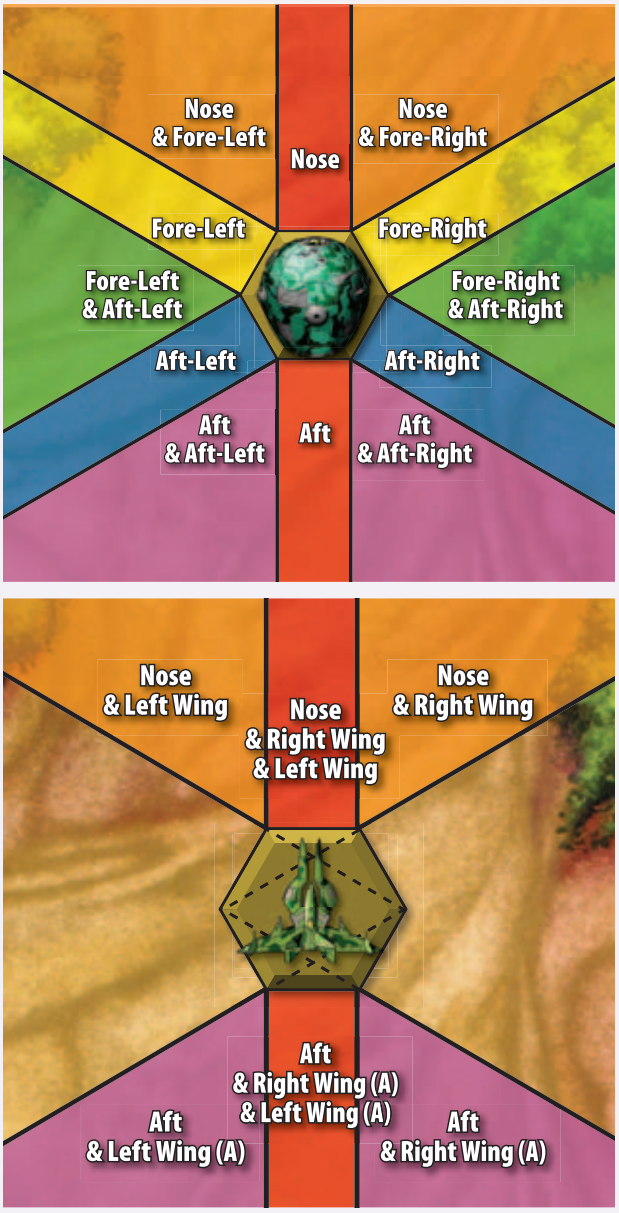
Air-to-Air Attacks (p. 241)

Units at the same altitude figure ranges normally. At different altitudes, multiply the difference in altitudes by 2, and add the result to the range. Differences in altitude also create a "dead zone" around each unit. If the difference in altitude is 1, the attacker and target must be 4 inches away. If the difference is 2, they must be 6 inches away. If the difference is 3, they must be 8 inches away, and so on.

LOS between aerospace units is determined normally—the player must visually determine if the target can be seen from the attacking unit's position. LOS must be gauged from the unit's position on the board, and 1 inch vertically for every level of the unit's altitude.

Air-to-Ground Attacks (p. 242)

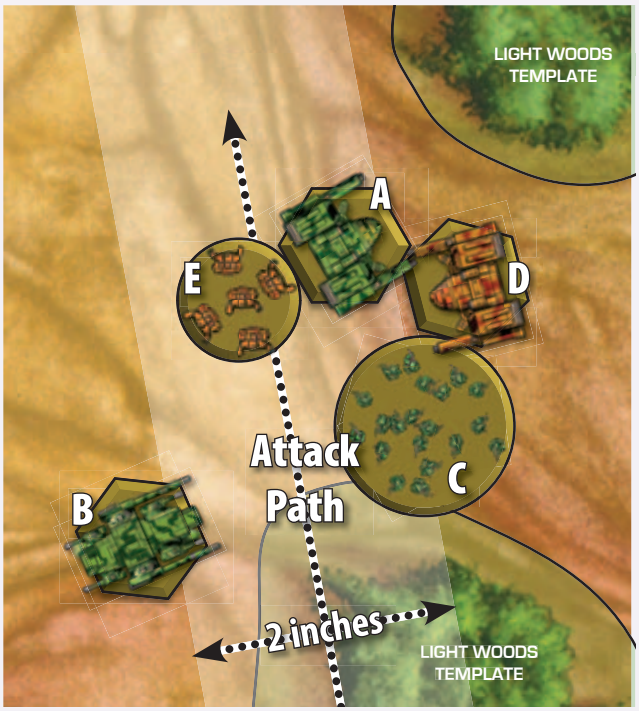
When an aerospace unit ends its movement over the ground map template, it can attack targets on the ground table. The player must first nominate an attack path over which the fighter will pass. This must form a straight line and represents the fighter's flight path across the ground table. Aerospace units operating directly on the ground table use their actual flight path rather than designating an attack path.



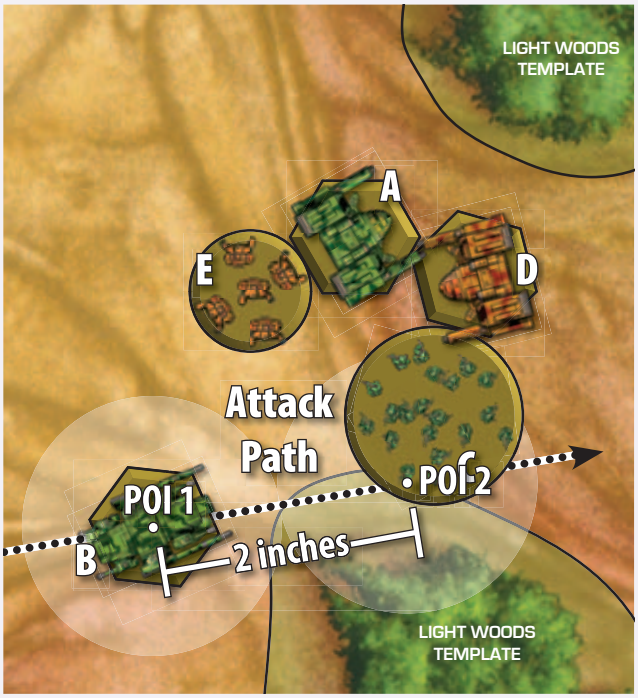
• AEROSPACE FIRING ARCS DIAGRAMS •

Strafing: When strafing, the attacker nominates up to a 10-inch x 2-inch stretch along his attack path. Any units whose bases lie along that path (friend or foe) are subject to the strafing attack.

In the Strafing Diagram (see p. 400), the attacking player decides to perform a strafing run and chooses his attack path to maximize damage to his opponent. His strafing attack targets 'Mechs A and B, and Infantry C, of his opponent's forces. While the attacker is careful to keep his attack path away from his 'Mech D, he will be forced to make a strafing attack on his Battle Armor E because it lies within the strafing attack path.



• STRAFING DIAGRAM •



• BOMBING DIAGRAM •

Striking: Striking follows all the rules in *Total Warfare*. Units flying NOE must also take into account the terrain within 4 inches in front of the target.

Dive-Bombing: To perform a dive-bombing attack, designate a single Point of Impact (POI) along the attacker's flight path, and center the appropriate AoE Template over the POI. If the attack fails, roll 1D6 to determine the scatter direction (using the AoE Template), then roll 1D6 x2 to determine the number of inches away to place the new POI.

Altitude-Bombing: When altitude bombing, the attacker may choose up to 10 POI, 1 POI every 2 inches, along the flight path to bomb. Either 1 or 2 bombs may be dropped per POI. If the attack fails, roll 1D6 to determine the scatter direction (using the AoE Template; a roll of 1-2=6, 3-4=1, 5-6=2), then roll 1D6 x2 to determine the number of inches away to place the new POI.

Bomb Types: HE bombs affect anything within the 2" Area of Effect (AoE) Template, centered on the POI. Cluster bombs affect anything within the 6" AoE Template. To determine attack direction, use the POI as the direction from which the attack originates. If the POI is directly centered on a unit, roll 1D6 for that unit. On a result of 1-3, it hits the front; a 4-6 hits the back.

The bombing diagram shows the previous example, but instead the attacker has decided to perform an altitude bombing. He chooses a path clear of his 'Mech D and Battle Armor E, and sets the first POI directly over 'Mech B. He decides to continue to a second POI, which must be 2 inches away along the attack path, landing on the edge of a light woods template. The diagram shows the area of effect if HE bombs are used; the bombs dropped on POI 1 affect 'Mech B, and the bombs dropped on POI 2 affect Infantry C.

Attacks by Grounded Aerospace Units (p. 249)

Playing with a grounded DropShip requires the use of a large model, such as the *Leopard* DropShip produced by Iron Wind Metals. Determining firing arcs and attack direction for a grounded spheroid DropShip is simple; bisect the model into a right arc/side and left arc/side. Nose-mounted weapons can only fire on airborne aerospace units, and aft-mounted weapons can only target units within 1 inch of the DropShip model's edge.

Grounded aerodyne DropShips require a little finesse, as they use their existing firing arcs and attack direction, but scaled up to fit the model being used.

LOS: Line of sight from a DropShip to a target may be drawn from any point on the DropShip, whichever point provides the best LOS circumstances.

QUICK-STRIKE RULES

For players who want to ratchet up the speed of their miniatures-rules games, this optional rules set allows them to combine the speed of *BattleForce* with some of the tactical aspects of *Total Warfare*. This hybrid miniatures combat game system is called *Quick-Strike Rules*.

BattleForce Standard Rules: As noted for the miniatures rules at the start of this section (which rely on an understanding of *Total Warfare* rules), please keep in mind that this is a hybrid system. An understanding of *BattleForce: Standard Rules* (see p. 212) is required to use the *Quick-Strike Rules*.

GAME TERMS

Quick-Strike Rules uses the same game terms as *BattleForce* (see p. 213). However, in these rules, an Element explicitly refers to a single miniature.

COMPONENTS

Like *BattleForce*, *Quick-Strike* uses the same components found in *Total Warfare* and *Tactical Operations* (see pp. 20-33, *TW* and p. 10, *TO*). All Elements described in *Total Warfare* and *Tactical Operations* can be converted for use in *Quick-Strike*, using the appropriate *BattleForce*: *Conversion Rules* (see p. 342). As the *Quick-Strike Rules* are for use with ground-based combat—with air support, as appropriate—the aerospace Elements described in this book are beyond the scope of these rules.

Record Sheets

Quick-Strike uses *BattleForce* record sheets, and most Elements use *BattleForce* stat blocks. The exception is noted below.

Game Statistics (MP): Each Element's *BattleForce* MP stat block is multiplied by 2 inches to generate its *Quick-Strike* MP. Keep any movement mode indicator.

> *Brian's lance consists of a* Raptor *RTX1-OE (7 MP), a* Koshi Prime *(7/6j MP), a* Talon *TLN-5W (8 MP) and a* Crab *CRB-C (5 MP). To use these Elements in* Quick-Strike Rules*, he simply changes their MP stats on the record sheet to 14", 14"/12"j, 16" and 10", respectively.*

Miniatures

Unlike *BattleForce*, each Element is represented by a single miniature on the playing area; each stat block on a *BattleForce* record sheet corresponds to a single miniature. Additionally, Elements that have firing arcs should be mounted on hex bases. The hex base allows players to know which direction such Elements are facing for firing weapons and receiving damage.

Infantry and Hex Bases: As noted previously in this section (see p. 387), infantry and battle armor Elements can do away with hex bases because these Elements have no firing arcs.

Terrain

For ideas on what to use for terrain features such as woods, levels, sublevels, water and buildings, see *Terrain*, page 387.

A Note on Scale and the Rules

Unlike hex-based play, scale in *Quick-Strike* is purposefully vague, sacrificing some fidelity to *Total Warfare* and *BattleForce* in exchange for playability as a tabletop miniatures game.

Level, Elevation and Altitude

Levels, elevations and altitudes in *Quick-Strike* work the same way as in the *Miniature Rules* (see p. 388).

PLAYING THE GAME

This section provides an overview of the turn sequence for *Quick-Strike*. These rules assume two sides in each game, either two players or two teams of players. Wherever the rules refer to a player, that term can mean a team of players as well as an individual.

Sequence of Play

A *Quick-Strike* game consists of a series of turns. During each turn, all Elements on the table have an opportunity to move and fire their weapons or make physical attacks. Each turn consists of several smaller segments of time, called phases. During each phase, players may take one type of action, such as movement or combat. The players execute the phases in a given order. Specific actions, movement, effects of damage and so on are fully explained in separate sections later in these rules.

Each turn includes the following phases, performed in the following order:

1. Initiative Phase
2. Movement Phase
3. Combat Phase
4. End Phase

Initiative Phase

Each player rolls 2D6 and adds the results together to determine Initiative; re-roll ties. The player with the higher result is the Initiative Winner. The other player is the Initiative Loser for this turn.

Movement Phase

The Initiative Loser selects and moves one of his Units (each Element in the Unit moving individually). Then the Initiative Winner selects and moves one of his Units. Movement alternates between sides until all Units have been moved. Ground and aerospace Units are both moved in this phase, in any order the player wishes.

In each Movement Phase, if the side moving Units has more Units than the other side, it may need to move multiple Units as described in *Unequal Numbers of Units*, page 39, *Total Warfare*.

Combat Phase

The Initiative Loser completes all actions in this phase, followed by the Initiative Winner.

The acting player resolves combat for all of his Elements. Each Element may make one attack. Damage from these attacks is resolved as each Element finishes its attacks, but does not take effect until the End Phase; this means a destroyed Element will normally have a chance to return fire.

End Phase

Both players may complete this phase simultaneously.

Each player executes any miscellaneous actions remaining in the turn, such as removing eliminated Elements. The specific rules for such actions state whether or not they take place during the End Phase. For example, Elements that began a turn shut down from overheating restart in the End Phase, with their heat levels reduced to zero.

Players repeat all these steps until one side meets its victory conditions for the scenario.

MOVEMENT PHASE

The following section describes the rules governing ground movement.

Movement Basics

Each Element may move a number of inches up to its allotted

MOVEMENT COST TABLE

Terrain Type	Movement used per Inch of Terrain	Prohibited Elements
Clear terrain	1″[1]	Naval Vessel
Paved/Road/Bridge	+0″[2]	Naval Vessel
Rough/Rubble	+1″	Wheeled, Naval Vessel
Woods	+1″[3]	Wheeled[4], Hover, VTOL[5], Naval Vessel
Water		Infantry[6], Vehicles[7,8], IndustrialMechs[9]
Level 0	+0″[10]	
Level 1[11]	+1″[12]	
Level 2[11]	+3″[12]	
Level Change (up or down)[13]		
Per 1″ level (or elevation)	+1″ ('Mechs, VTOLs, subs, ProtoMechs)	—
Light Building	+1″[14]	VTOL, Naval Vessel
Medium Building	+2″[14]	VTOL, Naval Vessel
Heavy Building	+3″[14]	VTOL, Naval Vessel
Hardened Building	+4″[14]	VTOL, Naval Vessel

[1]If a wheeled Support Vehicle lacks the Off-Road special ability, then movement on unpaved surfaces costs an additional 1″ per inch moved. This is noted as the Road special ability on the Element's stat block.
[2]Ground vehicles gain an extra 2″ of movement allowance, provided the Element begins its movement on a road and stays on the road for all its movement.
[3]Woods do not impede movement for infantry.
[4]Elements with the Bicycle or Monocycle special ability may move through woods.
[5]VTOL and WiGE vehicles can enter woods provided their elevation is higher than the level of the woods.
[6]Infantry can move through water if they are noted as having the UMU special ability.
[7]Hovercraft may move through water along the surface at the cost of 1″ per inch moved.
[8]Wheeled or tracked vehicles with the Amphibious special ability can move through water on the surface at a cost of 2″ per inch moved.
[9]An IndustrialMech can only move in Depth 1 water unless it has the SEAL special ability.
[10]Only Naval Vehicles, or vehicles with the Hover or Amphibious special ability, may move on the surface of water.
[11]Submarine Naval Vehicles move at the cost of 1″ per inch moved.
[12]This is the cost to move along the bottom of a water area.
[13]Infantry, ground vehicles, ProtoMechs and WiGEs may not climb over terrain taller than 1″. 'Mechs cannot climb terrain over 2″.
[14]Infantry moves freely through buildings.

movement. An Element may move in any direction, and at the end of its movement, the Element may face any direction. An Element need not move its full amount; in place of moving, an Element may simply stand still.

Terrain: Terrain may impede movement, as shown on the Movement Cost Table (see above).

Water: Water has a depth that functions like a level change (see *Level Change*, below). However, Elements entering water must pay the extra movement cost for that action, plus the cost for the level change (if any), plus the base cost for movement, except for amphibious, hover, WiGE and Naval vehicles (see Movement Cost Table, see above).

Submerged Elements use slightly different movement rules (see *Underwater Movement*, p. 219).

Prohibited Terrain: Certain kinds of Elements may not enter certain types of terrain. These terrain types and movement restrictions appear on the Movement Cost Table.

Support Vehicles: If a wheeled Support Vehicle lacks an off-road vehicle chassis and controls, then movement on unpaved surfaces costs an additional 1 inch per inch moved. This is noted as the Road special ability on the Element's stat block.

Level Change

'Mechs may climb onto/over terrain up to 2″ high, at a cost of 1″ movement per 1″ levels (round levels normally; see *Rounding*, p. 213). Ground vehicles, infantry and ProtoMechs may only climb onto/over terrain up to 1″ high (this rule does not apply to jumping or VTOL Elements; see *Jumping*, p. 403, and *VTOL Movement*, p. 403), at a cost of 2″ movement per 1″ level (ProtoMechs pay 1″ movement per 1″ level). Levels greater than these are considered prohibited terrain. The movement cost can be expended at any point along the path of movement, but the latest it can be done is when the miniature's center of mass crosses the edge of the different level. If the Unit does not have enough movement allowance remaining at that point, it must stay at the previous level and cannot move any further.

VTOLs and Submarines: VTOLs and submarines may change their elevation/depth by any number, at the cost of 1″ per 1″.

Minimum Movement

As long as an Element is mobile (meaning its MP has not been reduced to zero), it can always move 2″ in any direction, regardless of terrain, unless the terrain is prohibited.

Vehicles

Vehicles have one of seven movement types as shown on the Vehicle Movement Mode Table (see p. 217). Each movement mode functions as it does in *BattleForce* (see *Vehicles*, p. 218), with the differences outlined below.

Naval Movement: This type of movement includes moving on and (for submarines) below the water's surface. Surface Naval Elements move through water at a cost of 1" per inch moved, regardless of depth.

Submarines (Submersible Movement): Regardless of depth, a submarine (including Support Vehicles with the Submersible Chassis and Controls modification) expends only 1" to move through 1 inch of water. A submarine Element can move vertically at a cost of 1" per 1 inch of depth that it ascends or descends. A submarine can move any number of depths up and down as long as it has sufficient movement.

The Element's depth must be recorded (or clearly indicated) each turn at the end of the Ground Movement Phase.

VTOL Movement: Any Element with VTOL movement mode is considered a VTOL for purposes of movement rules. This should be noted on the Element's MP stat block. VTOLs rise a number of inches off the table, which is called its elevation. A VTOL may change its elevation at any point during its movement, at the cost of 1" per 1" of elevation changed, not counting horizontal movement.

VTOLs ignore terrain for the purposes of movement. However, the VTOL must have clearance over any terrain it is attempting to pass through. A VTOL that moves into terrain and doesn't clear it crashes. A VTOL that crashes is considered destroyed at the end of the phase. Note: A VTOL with the Amphibious special ability may also land in a water hex.

The Element's elevation must be recorded (or clearly indicated) each turn at the end of the Ground Movement Phase.

Wing-in-Ground-Effect (WiGE) Movement: WiGE Elements have a ground movement allowance of 2" (and are considered a hover Element for purposes of terrain restrictions) until they take off. Takeoff costs 4" of movement, which must be spent in a single turn, and places the vehicle at one elevation above the level of the underlying terrain. While airborne, WiGE vehicles fly one elevation above the underlying terrain, and so are unaffected by water, rubble or rough terrain. They must maneuver over or around woods.

A WiGE vehicle must move at least 4" per turn to remain airborne (this minimum movement requirement does not apply in the turn the WiGE takes off); otherwise it must land at the end of its movement (it does not cost a WiGE any movement to land). WiGE vehicles may only land in clear or paved terrain. If they attempt to land in any other hex, they crash. A WiGE that crashes takes 1 point of damage and may not move for the rest of the game.

A WiGE Element entering terrain higher than its current elevation automatically maintains its one elevation of clearance above the terrain, and expends no additional movement to do so. A WiGE cannot enter terrain 2 or more inches higher than its current elevation.

A WiGE entering terrain with a level lower than its current elevation automatically descends to maintain the standard one elevation above the underlying terrain, regardless of the difference in levels between the two elevations, at no additional movement expenditure. However, a WiGE may avoid such a descent (and remain at the same elevation) by expending 2 additional inches per inch moved. If the WiGE does not reach terrain that is within 1 level below it by the end of its Movement Phase, it automatically descends to the standard 1" above the underlying terrain where it ended its movement. If this occurs over prohibited terrain, the WiGE crashes.

The Element's elevation must be recorded (or clearly indicated) each turn at the end of the Ground Movement Phase.

Additional Movement Rules

The following additional rules cover movement not already discussed above.

Jumping: Any jump-capable Element has a 'j' listed next to its MP statistic. A jumping Element ignores terrain for the purposes of movement, and it may jump in any direction, regardless of its original facing. The player chooses an end point (up to its movement allowance) for the Element to jump to, and then the Element travels there along the shortest path possible, landing with any facing desired. However, the jumping Element must have clearance over any terrain it is attempting to pass over. A jumping Element can jump over any terrain that is less than half of its movement allowance in height.

A jumping Element may safely jump down from any height.

Elements may jump into, but not out of, water.

Movement on Pavement: The same as for the miniatures rules (see *Movement on Pavement*, p. 219); however, there is no possibility of skidding.

Underwater Movement (Non-Naval Elements): Underwater movement—moving across the bottom of a water area, as opposed to moving through the water itself—is rare but does occur, though few Elements not classified as Naval Vessels can survive complete submersion and still function.

To be considered underwater, an Element must be completely submerged. It cannot be in Depth 0 water; 'Mechs must be in at least Depth 2 water. Unless an Element has the UMU special ability, the following rules apply for movement underwater in depths up to Depth 15.

An Element must pay 4" for each inch moved. In addition, a 'Mech must pay all standard level change costs for moving from one depth to another (see Movement Cost Table, p. 402).

Facing

'Mech miniatures are considered to be facing the same way as the feet of the miniature representing the Element. Vehicle and aerospace Elements are considered to be facing in the direction of the front side of their miniature.

An Element's facing affects combat (see *Combat Phase*, p. 404), and can only be voluntarily changed during the Movement Phase.

Airborne Aerospace Elements and Facing: Facing for airborne aerospace Elements on the ground playing area is determined by the Flight/Attack Path they take (see *Atmospheric Combat*, p. 403).

Stacking

Unlike *Total Warfare* and *BattleForce*, Elements in *Quick-Strike* do not stack. The closest miniatures may get to each other is base-to-base.

Aerospace Movement

Aerospace Units in *Quick-Strike* use the Abstract Aerospace System (see p. 18) for movement and combat.

COMBAT PHASE

The following section describes the rules governing combat.

The acting player chooses a target for an Element (and how much of its Overheat Value the attacker will use, if applicable; see *Overheating*, p. 236), resolves combat for that Element, and then moves on to another available Element and repeats the process. Valid targets are other Elements and buildings (and other structures such as bridges). Elements are free to attack any Element within range, or may choose to refrain from making an attack.

Types of Attacks

Each Element may make one attack per turn. There are three types of attacks: weapon attacks, physical attacks and aerospace attacks. This section focuses on the standard rules for weapon attacks. Physical attacks and aerospace attacks are covered in detail in their own sections (see *Physical Attacks*, p. 407, and *Aerospace Attacks*, p. 408).

Resolving Weapon Attacks

The sequence for resolving weapon attacks is as follows:

1. Verify line of sight (LOS)
2. Verify firing arc
3. Determine range
4. Determine to-hit number
5. Roll to hit
6. Determine and apply damage
7. Roll for critical hits (if applicable)

Verify Line of Sight

Line of sight (LOS) in *Quick-Strike* is determined in much the same way as in the miniatures rules (see p. 393). Elements can usually be sighted simply by going to the level of the attacking Element and looking at the target miniature. If the target miniature can be seen, then the Elements have LOS to one another. When this is not possible, players must determine LOS by running a straight measuring tape or a taut string from miniature to miniature. If less than 1/3 of the miniature is visible behind terrain, then LOS is automatically blocked. However, woods do not automatically block LOS as buildings and hills do. Woods only block LOS when LOS passes through 6" or more of intervening woods. Woods that intervene but do not block LOS impose a penalty on attack to-hit numbers (see the To-Hit Modifiers Table, p. 406).

Airborne Aerospace Elements and LOS: Airborne aerospace Elements always have LOS to each other.

Airborne Aerospace Elements vs. Non-Aerospace Elements: All non-aerospace Elements (unless completely submerged in water) have LOS to all airborne aerospace Elements on the ground playing area (the Central Zone of the Radar Map). Non-aerospace Elements never have LOS to airborne aerospace Elements in other zones of the Radar Map. All airborne aerospace Elements on the ground playing area have LOS to all non-aerospace Elements (unless completely submerged in water).

LRM Indirect Fire: If an Element has the Indirect Fire (IF) special ability, it may attack a target indirectly. Indirect fire allows an Element without a direct line of sight to a target to attack that target, though a friendly Element must have a valid line of sight to the target (this Element is referred to as the spotter). An attacker with a valid LOS to a target cannot make an indirect fire attack.

Use the following modifiers for indirect fire attacks:

- Range modifier based on the range between the target and the firing Element;
- +1 for firing indirectly;
- All standard modifiers for target's available MP;
- Terrain modifiers based on line of sight from the spotting Element.

If the spotting Element makes an attack in the turn that it spots for another Element, apply a +1 modifier to the spotting Element's attack, as well as another +1 modifier (for a total of +2) to the indirect fire attack. If the spotting Element makes no attack, do not apply these additional modifiers. The spotter can spot for any number of attacking Elements to a single target, but it cannot spot for multiple targets.

Partial Cover ('Mechs Only): When determining LOS, if the target is more than 1/3 behind blocking terrain, LOS is not considered blocked; instead, the target has partial cover and the attacker applies a penalty to his to-hit numbers (see To-Hit Modifiers Table, p. 406).

Terrain Note: When using sublevel templates as opposed to carved-out sublevels, players must rely on a little imagination and compromise. Figure LOS as normal, except that for every level below 0 on which a 'Mech stands, it is actually 1 inch deeper into the table. Depending on where the 'Mech is positioned, there may be partial cover or even blocked LOS.

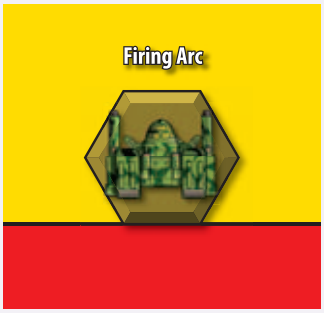
A 'Mech in Depth 1 water always has partial cover, regardless of whether the players use water templates or carved-out water terrain. Depth 2+ water completely blocks LOS unless both attacker and target are in Depth 2 water or lower.

Firing Arcs

Every Element in *Quick-Strike* has a particular area into which it may make attacks. This is known as the firing arc. All Elements except infantry and DropShips use this firing arc. Firing arcs extend to the edge of the battlefield in the direction indicated by the diagrams. If less than half of the target Element's base is within the attacker's firing arc, then the attack cannot be made.

DropShips: Grounded spheroid DropShips use the same firing arcs as in the *Miniatures Rules* (see p. 399).

Infantry: Infantry Elements (including battle armor) have a 360-degree firing arc, and may fire in any direction. All other Elements have the firing arcs shown at right.



• QUICK-STRIKE FIRING ARCS DIAGRAM •

Determine Range

Quick-Strike uses fixed range brackets for all weapon types. To determine range, measure the distance from the edge of the attacker's base to the edge of the target's base, or the edge of the terrain feature being targeted. Compare this number to the Quick-Strike Range Table to determine range.

Each attack does a fixed amount of damage at each of the indicated ranges. Some Elements cannot do damage at every range, indicated by a dash or a zero on the record sheet for that range bracket. If the Element cannot do damage at a given range, it may not attack at that range.

QUICK-STRIKE RANGE TABLE

Distance	Range
Up to 6″	Short
Up to 24″	Medium
Up to 42″	Long

Ranges for underwater combat are halved.

Base-to-Base Contact: Non-infantry Units may not make weapon attacks against targets with which they are in base-to-base contact.

Non-Aerospace Elements Attacking Airborne Aerospace Elements: To determine the range from a non-aerospace Element to an airborne aerospace Element, measure from the edge of the attacker's base to the dead-center of the ground playing area, and add 1D6 inches. If the attacking Element was the recipient of an attack this turn by the targeted aerospace Element, then the range to the target is considered short.

Airborne Aerospace Elements: Airborne aerospace Elements do not use ranges in the conventional manner (see *Aerospace Attacks*, p. 408).

Determine To-Hit Number

Once a player has determined that he has LOS to his target, and that the target is within range and within the attacking Element's firing arc, he must determine the to-hit number. The player's die roll must equal or exceed the to-hit number in order to score a successful shot.

The base to-hit number for all attacks is the Element's Skill Rating. This number is then modified by range, the target's available movement, terrain features, Element type and other miscellaneous situations as shown on the To-Hit Modifiers Table. All modifiers are cumulative unless otherwise stated. Shutdown Elements do not receive a target movement modifier.

Non-Aerospace Elements Attacking Airborne Aerospace Elements: Aerospace Elements do not receive a target movement modifier when in flight, but instead apply a +2 to-hit modifier due to their Element type. (Grounded aerospace Units receive no modifier except the –2 on the table that applies to grounded DropShips and the –4 for being immobile.)

Remember to modify the to-hit number for the Flak special ability if applicable.

Roll To-Hit

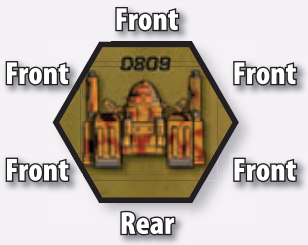
Roll 2D6 for each Element and compare the total to the modified to-hit number identified in the previous step. If the dice roll equals or exceeds the modified to-hit number, the attack is successful. Otherwise, the attack fails.

Determine and Apply Damage

When an attack is successful, its damage is applied immediately, but the damage does not take effect until the End Phase. Before damage can be applied, the attack direction and amount of damage must be determined.

Attack Direction: When an attack hits a Unit that is neither infantry nor a grounded spheroid craft, it hits from the target's front or rear. Infantry and grounded spheroid craft always take damage to the front.

To determine whether the attack hits front or rear, lay a straightedge from the center of the attacker's base to the center of the target's base. If the attack enters through the rear hexside of the target's base, the attack direction is the rear. Otherwise, the attack direction is the front. If the straightedge crosses at the intersection of two hexsides, the target chooses which side is hit by the attack.



• ATTACK DIRECTION DIAGRAM •

Any attack striking a target in the rear does 1 additional point of damage.

- **Airborne Aerospace:** If the aerospace Unit flew over the attacking ground Unit via its attack/flight path, any successful ground-to-air fire will strike the front of the aerospace Unit. If the aerospace Unit did not fly over the ground Unit, determine the attack direction as if the Aerospace Element is in the dead center of the game table, facing in the direction of its flight path.
- **Mechanized Battle Armor:** If an Element is carrying mechanized battle armor, roll 1D6. On a result of 1–4, the carrying Element takes damage. On a result of 5–6, the mechanized battle armor takes damage. Any remaining damage is then transferred to the carrying Element. Only a successful attack against the carrying Element can inflict damage on the battle armor.

Amount of Damage: The base amount of damage dealt from a successful attack is equal to the Element's S, M or L Damage Value. If the target is at short range, the base damage is the Element's S value. For a target at medium range, use the M value. For a target at long range, use the L Damage Value. Any attack striking a target in the rear does 1 additional point of damage.

Elements that track heat may inflict additional damage on their targets by overheating; however, the decision to do so must be made when the attack is declared (see *Overheating*, p. 236).

If an Element has the Indirect Fire special ability and is making an indirect attack, use the indirect fire rating instead of the damage for the given range.

Damage Underwater: Elements underwater take only half damage (round down to a minimum of 1) from each attack; however, each attack generates a chance for a critical hit regardless of whether or not structure is damaged (see *Roll for Critical Hits*, p. 230). Additionally, if an Element that is underwater loses all of its armor, it is destroyed.

Heat Special Ability: Some Elements have a preponderance of heat-generating weapons. This is reflected on the Element's stat block by the Heat special ability. This ability includes a numeric rating—for example, ht1. If an Element with this special ability successfully strikes a target with a weapon attack, the target Element will gain heat in the End

TO-HIT MODIFIERS TABLE

ALL MODIFIERS CUMULATIVE

RANGE MODIFIERS		
Range	**Distance**	**Modifier**
Short	Up to 6″	+0
Medium	Up to 24″	+2
Long	Up to 42″	+4

TARGET MOVEMENT MODIFIERS[1]	
Target's Available MP	**Modifier**
0-4″	+0
5″-8″	+1
9″-12″	+2
13″-18″	+3
19″-34″	+4
35″+	+5

TERRAIN MODIFIERS[2]	
Terrain	**Modifier**
Underwater	+1[3]
Woods	+2
Partial Cover	+2

PHYSICAL ATTACKS MODIFIERS	
Physical Attack Type	**Modifier**
Charge	+2
Death From Above	+3
Melee Physical Attack	+1
Standard Physical Attack	+0
Target is Grounded DropShip	–2

TARGET MODIFIERS	
Target	**Modifier**
Has Stealth Armor	Varies[11]
Is Shutdown/Immobile	–4[12]

MISCELLANEOUS MODIFIERS	
Attacker	**Modifier**
Attacking Indirectly	+1[4]
Fire Control Hit	+2[5]
Flak Special Ability	–2[6]
IndustrialMech	+1[7]
Grounded DropShip	–2
Support Element	+2[8]
Striking	+2
Strafing	+4
Altitude Bombing	+3
Dive Bombing	+2
Spotting for Indirect Fire	+1[9]
Overheated	+ Heat Level [1-3]

TARGET TYPE MODIFIERS	
Target Element Type	**Modifier**
Airborne Aerospace Element	+2[10]
Airborne DropShip	–2
Airborne VTOL or WiGE	+1
Battle Armor	+1
Jump Capable	+1
Large Support Element	–1
ProtoMech	+1
Small Craft	–1

[1]Modifier is based on available movement modified by heat level and critical hits, if applicable. Inches moved are irrelevant. Does not apply to Aerospace Elements.
[2]Applies when target occupies the indicated terrain.
[3]Only if the attacker is also underwater, otherwise the attack is impossible.
[4]If the spotting Element makes a weapon attack in the same turn as it spots, apply a +2 modifier instead.
[5]May apply multiple times. Does not apply to physical attacks.
[6]Applies to ground-to-air attacks against airborne aerospace, VTOL and WiGE targets only.
[7]Disregard if the IndustrialMech has the Advanced Fire Control (AFC) special ability (see p. 345).
[8]If Support Element has Basic Fire Control, replace with +1 modifier. If Support Element has Advanced Fire Control, replace with +0 modifier.
[9]Not cumulative with the Attacking Indirectly modifier.
[10]Includes Fixed-Wing Support Elements, conventional fighters, Small Craft and DropShips. Only applies when airborne. Reduce this to +0 when the attacker is also an airborne Aerospace Element.
[11]Battle armor targets: Add +1 at short and medium ranges. Add +2 at long range. All others: +0 at short range, +1 at medium range and +2 at long range.
[12]Includes bridges, buildings, grounded DropShips, hexes and woods. Shutdown Elements do not get a target movement modifier.

Phase of the turn in which it was struck. No Element may gain more than 2 points of heat in this fashion. If the Element does not use a heat scale, it receives damage equal to the attacker's heat rating instead. For example, a combat vehicle struck by a weapon attack from an attacker with ht2 will take 2 additional points of damage.

Applying Damage

Applying Damage in *Quick-Strike* is the same as in *BattleForce*. To apply damage from an attack, begin with the amount of damage the attack inflicts and start at Step 1. Answer each question yes or no, and follow the instructions.

1. Does the Element have armor remaining?

Yes: Check off one armor circle on the Armor Diagram for every point of damage taken, until all damage is applied or all armor is destroyed. Go to Step 2.

No: Proceed to Step 3.

2. Is there damage remaining?

Yes: Go to Step 3 to allocate remaining damage.

No: Go to Step 6.

3. Does the Element have structure remaining?

Yes: Check off one structure circle for every point of damage taken, until all damage is applied or all structure is destroyed. Go to Step 4.

No: Proceed to Step 4.

4. Is there damage remaining?

Yes: The Element is destroyed.

No: Go to Step 5.

5. Does the Element have structure remaining?

Yes: Roll once on the Determining Critical Hits Table (see p. 230). Go to Step 6.

No: The Element is destroyed.

6. Does the Element have the BAR special ability or does the damage from a single attack exceed the Element's damage threshold?

Yes: Roll once on the Determining Critical Hits Table (see p. 230). The attack is finished.

No: Go to Step 7.

7. Is the Element a vehicle?

Yes: Roll once on the Determining Motive Systems Damage Hits Table (see p. 231). The attack is finished.

No: The attack is finished.

Roll for Critical Hits

All Elements (except infantry and battle armor) suffer critical hits. Any time a hit damages structure (or any time a Element protected by BAR 1–9 or commercial armor suffers damage), a critical hit may occur. Aerospace Elements may also suffer critical hits if the damage from a single attack exceeds their damage threshold.

To determine whether an Element takes a critical hit, as well as the type of hit taken, roll 2D6 and consult the Determining Critical Hits Table (see p. 230). If the target Element is an IndustrialMech, roll 2D6 twice and apply both results.

Mark clearly any critical hits against an Element on the record sheet. The effects of critical hits are permanent.

If the given critical hit effect does not apply to the Unit type in question (for example, a weapon hit on an Element that has all its Damage Values reduced to zero), apply 1 additional point of damage instead; do not roll for an additional critical hit as a result of this damage.

Critical Hit Effects

The critical hit effects are exactly as described in *BattleForce* (see *Critical Hit Effects*, p. 230), with the following exception.

MP Hit: Something related to the Element's ability to move has been damaged. The affected Element loses 50 percent of its current movement, rounding normally with a minimum of 2" lost. An Element reduced to 0 inches of movement cannot move.

Physical Attacks

There are three types of physical attacks: Standard, Melee and Special. 'Mechs may make all three types of physical attacks. ProtoMechs may only make Standard physical attacks, and vehicles may only attempt the Charge Special physical attack. An Element may only make one physical attack per turn.

Standard Physical Attacks: Standard physical attacks consist of punches and kicks where the 'Mech or ProtoMech uses its limbs to inflict damage on a target. Standard physical attacks can only occur when two Elements are within a range of 1 inch (measured from the edge of the attacker's base to the edge of the target's base). The target Element's base must also be more than 50 percent within the attacking Element's firing arc.

Melee Physical Attacks: Only 'Mechs and vehicles with the Melee special ability may make Melee physical attacks. The Element uses a weapon to augment its normal physical attack damage. Elements that have the Melee special ability may not choose to make a Standard physical attack instead. Melee physical attacks can only occur when two Elements are within a range of 2 inches (measured from the edge of the attacker's base to the edge of the target's base). The target Element's base must also be more than 50 percent within the attacking Element's firing arc.

Special Physical Attacks: Charge and Death From Above (DFA) are more aggressive and risky physical attacks. Only 'Mechs and vehicles may make Charge attacks, and only 'Mechs may make DFA attacks. Only one Special physical attack may be attempted per target, per turn—once an Element has been targeted for a Special physical attack, it cannot be the target of any further Special physical attacks. Charges and Death From Above attacks can only be completed if the attacker can move far enough to end his movement adjacent to the target in base-to-base contact, and only if the target has already completed its movement.

Resolving Physical Attacks

Physical attacks follow a process similar to weapon attacks, with several steps omitted. The process for resolving physical attacks is:

1. Determine to-hit number
2. Roll to hit

3. Determine and apply damage
4. Roll For critical hits (if applicable)

Determine To-Hit Number: The base to-hit number for all physical attacks is the Element's Skill Rating. This number is modified by the physical attack type, target's available movement, terrain features and other miscellaneous situations, as shown on the To-Hit Modifiers Table. Modifiers are cumulative unless otherwise stated.

Roll To Hit: Roll 2D6 for each Element and compare the total to the modified to-hit number identified in the previous step. If the dice roll equals or exceeds the modified to-hit number, the attack is successful. Otherwise, the attack fails.

Determine and Apply Damage: When an attack is successful, its damage is applied immediately, but the damage does not take effect until the End Phase. All physical attack damage is applied in the same fashion as weapon attack damage.

Standard and Melee physical attack damage is equal to an Element's weight class. Elements with the Melee special ability add 1 to this number. Special physical attacks use different rules for determining damage, as described below.

Charge Attacks: In a Charge attack, the attacking Element ('Mech or vehicle) hurls itself into its target, using its mass and velocity to do damage. A successful Charge always damages attacker and target. The charging Element does damage based on its weight and distance traveled in the Movement Phase. Take the total inches traveled by the attacker, divide by 2, multiply by the number shown on the Charge Damage Table (see p. 232) and round normally. The result is the amount of damage inflicted on the target Element.

If the attack is successful, the attacking Element suffers damage equal to the target's weight/size class. This does not count as an attack for the targeted Element, and it may attack normally during its Combat Phase.

Death From Above Attacks: In order to execute a Death From Above attack, the attacking Element must have Jumping movement. Airborne aerospace Units may not be targeted by this attack.

The attacking Element does damage to the target equal to its Charge damage +1 (see the Charge Damage Table, above). If the attack is successful, the attacking Element suffers damage equal to its weight/size class. This does not count as an attack for the targeted Element, and it may attack normally during its Combat Phase. If the attack is unsuccessful, the attacking Element suffers its weight/size class +1 in damage.

If the target can sustain critical hits, make one roll for critical hits regardless of whether or not the target suffered internal structure damage. If the target suffered internal structure damage as a result of the attack, make an additional roll for critical hits.

Roll For Critical Hits: Physical attacks may inflict critical hits just like weapon attacks. Refer to *Roll For Critical Hits* (see p. 407).

Aerospace Attacks

There are two types of aerospace attacks: air-to-air and air-to-ground.

Air-to-Air Combat: As previously noted, Quick-Strike uses the Abstract Aerospace System to resolve the combat of aerospace Elements (see *Abstract Ground Support* and *Abstract Air-to-Air Combat*, pp. 19 and 21, respectively).

Air-to-Ground Combat: An airborne aerospace Element can execute one of four types of air-to-ground attacks in a combat turn: Bombing, Strafing, Striking or Spheroid DropShip. The following modifications apply to the standard combat rules to resolve such attacks:

- **Bombing Attacks (Altitude Bombing):** Altitude bombing allows a fighter Unit to attack along its flight path. Altitude bombing can attack one Point of Impact (POI) for each bomb the Element carries. The Element must drop one bomb every 2". If the Element carries several types of bombs, the pilot chooses which bombs are dropped on which POI.
- **Bombing Attacks (Dive Bombing):** An Element performing a dive bomb can drop any number of bombs in a POI.
- **Strafing Attacks:** In a strafing run, the attacker nominates up to a 10-inch x 2-inch stretch along his attack path. Any Units whose bases lie along that path (friend or foe) are subject to the strafing attack.
- **Striking Attacks:** The striking attack is an extremely accurate air-to-ground attack in which an Element makes a single attack against a single target.
- **Spheroid DropShip Attacks:** Spheroid DropShips may make an air-to-ground attack using their aft weapons arc and receive a 360-degree field of fire for such attacks.
- **Verify LOS:** Airborne Elements always have LOS to all ground Elements (so long as the ground Elements are not completely submerged or underground). While submerged Elements may not be targeted, the spot they occupy may be targeted by bombing attacks.
- **Determine Range:** Air-to-ground attacks always occur at short range.
- **Determine To-Hit Number (Bombing):** Use the Element's Skill Rating as the base to-hit number, and the attacker modifier for attack type. Include modifiers for the bombing type, but do not apply modifiers for immobile targets or the terrain the target is occupying.
- **Determine To-Hit Number (All Other Air-to-Ground Attacks):** When targeting an Element, use the attacking Element's Skill Rating as the base to-hit number and apply the attacker modifier for attack type (and all other modifiers as appropriate). Remember that grounded DropShips are also considered immobile targets. When targeting a POI, use the attacking Element's Skill Rating as the base to-hit number, and apply the attacker modifier for attack type plus a –4 modifier for an immobile target.
- **Bombing Scatter:** Use the appropriate Altitude- or Dive-Bombing Scatter rules from the *Miniatures Rules* (see p. 400).

Determine and Apply Damage: When determining and applying damage from an Air-to-ground Attack, Aerospace Elements deliver their damage based on the target's facing relative to the center of the gaming table.

Note that Bombing attacks never strike an Element from the rear.

- **Damage (Bombing)**: Damage depends on the type of bombs used:
  - Each High-Explosive or Cluster bomb delivers 2 points of damage.
  - Inferno bombs increase the heat level for every 'Mech Element (or landed aerospace fighter Element) by 2 points. (Additional Inferno bombs do not add to this effect). Against vehicle Elements, a hit by Inferno bombs



Forces under the employ of Chandrasekhar Kurita battle the Word of Blake on the Ruins of Gabriel.

delivers no damage, but the attacker rolls for a Critical Hit. Against ProtoMechs and Battle Armor each inferno bomb does 2 points of damage. Any non-battle armor infantry Elements struck by Inferno bombs are destroyed.
    - HE and Inferno Bombs use the 2" AoE Template, Cluster Bombs use the 6" AoE Template.
- **Damage (Spheroid DropShip Attacks)**: The damage from a DropShip Air-To-Ground attack is equal to the DropShip's Damage Value for the weapon arc used at the appropriate range.
- **Damage (Strafing Attacks)**: Successful Strafing attacks deliver half of the attacking Element's short range Damage Value (rounded normally, to a minimum of 1) to every Element in the strafing corridor. If overheating modifies a Strafing attack, add the Overheat Value to the short range Damage Value before reducing the damage by half. A Strafing attack that hits an Element from the rear delivers 1 additional point of damage, which is also added to the base Damage Value before halving takes place.
- **Damage (Striking Attacks)**: A successful Striking attack delivers the attacking Element's short range Damage Value (which may be adjusted by overheating) to the target Element, plus 1 additional point if the attack hits the target from the rear.

Overheating

Refer to the *BattleForce* rules on overheating (see p. 236), with the only difference being that in *Quick-Strike*, 2" are subtracted from an Element's current MP for each level of overheat.

END PHASE

Use the End Phase rules found in *BattleForce* (see p. 237). Both players may complete this phase simultaneously.

SPECIAL ABILITIES

Elements in *Quick-Strike* may use all the special abilities found in the *BattleForce Conversion Rules* (see p. 342); however, for any abilities that use ranges, players should use *Total Warfare* ranges instead, multiplying by 2, to get the ranges in inches.

> *Rick notes his* Spector *SPR-5F has ECM, which has a 1-hex radius according to the* BattleForce Conversion Rules. *However, ECM has a 6-hex radius according to* Total Warfare, *which becomes a 12" radius (from the edge of the* Spector*'s base) in* Quick-Strike *(6 hexes x 2" = 12").*



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BATTLETECH

JUMPSHIP RECORD SHEET

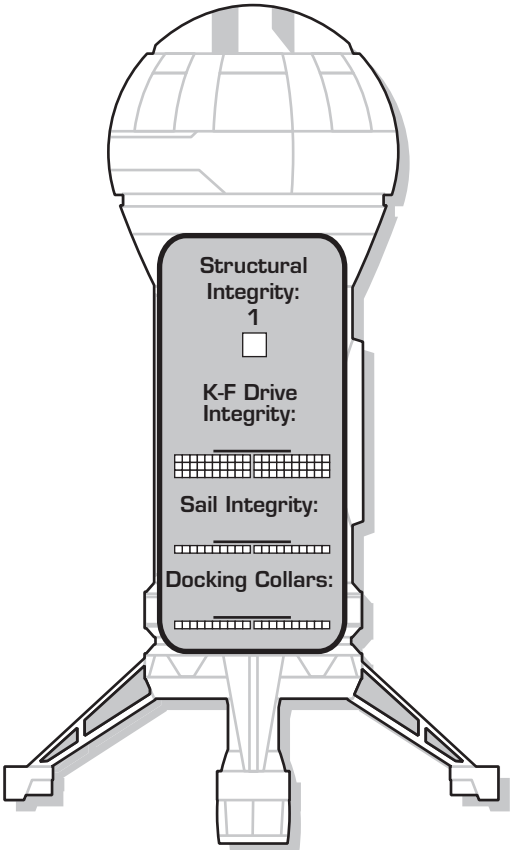
ARMOR DIAGRAM

Capital Scale

Nose Damage Threshold (Total Armor) ___ (___)

Fore-Left Damage Threshold (Total Armor) ___ (___)

Fore-Right Damage Threshold (Total Armor) ___ (___)



Aft-Left Damage Threshold (Total Armor) ___ (___)

Aft-Right Damage Threshold (Total Armor) ___ (___)

Aft Damage Threshold (Total Armor) ___ (___)

JUMPSHIP DATA

Type: _____

Name: _____ **Tonnage:** _____

Thrust: **Tech Base:**

Station-Keeping Only ☐ Clan ☐ Inner Sphere

DropShip Capacity: _____

Fighters/Small Craft: ___ / ___ **Launch Rate:** _____

Weapons & Equipment Inventory

Capital Scale				(1–12)	(13–24)	(25–40)	(41–50)
Standard Scale				(1–6)	(6–12)	(13–20)	(21–25)
Bay	Loc	Ht	SRV	MRV	LRV	ERV

Ammo: _____

Cost: _____ **BV:** _____

CREW DATA

Gunnery Skill: ___ **Piloting Skill:** ___

Hits Taken	1	2	3	4	5	6
Modifier	+1	+2	+3	+4	+5	Incp.

Crew: _____ **Marines:** _____

Passengers: _____ **Elementals:** _____

Other: _____ **Battle Armor:** _____

Life Boats/Escape Pods: ___ / ___

CRITICAL DAMAGE

Avionics (+1) (+2) (+5) **Life Support** (+2)

CIC (+2) (+4) (D)

Sensors (+1) (+2) (+5)

Thrusters

Left (+1) (+2) (+3) (D)

Right (+1) (+2) (+3) (D)

Engine (–1) (–2) (–3) (–4) (–5) (D)

VELOCITY RECORD

Turn #	1	2	3	4	5	6	7	8	9	10
Thrust										
Velocity										
Effective Velocity										

Turn #	11	12	13	14	15	16	17	18	19	20
Thrust										
Velocity										
Effective Velocity										

HEAT DATA

Heat Sinks: ___ (___)

Single ☐

Double ☐

Heat Generation Per Arc

Nose: ___

Left/Right Fore: ___ / ___

Left/Right Broadside: ___ / ___

Left/Right Aft: ___ / ___

Aft: ___

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BATTLETECH

WARSHIP RECORD SHEET

WARSHIP DATA

Type: _____

Name: _____ Tonnage: _____

Thrust: Tech Base:

Safe Thrust: _____ Clan ☐

Maximum Thrust: _____ Inner Sphere ☐

DropShip Capacity: _____

Fighters/Small Craft: ___ / ___ Launch Rate: _____

Weapons & Equipment Inventory

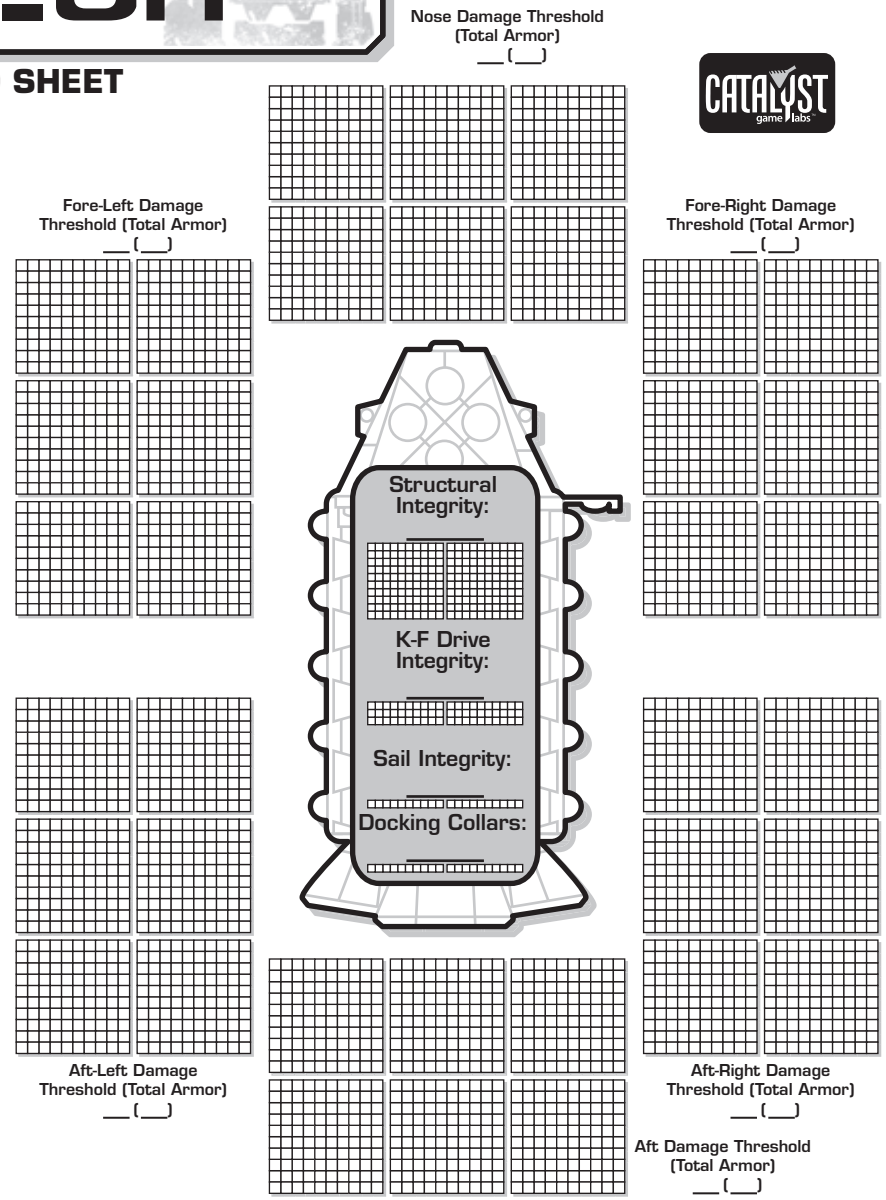
Capital Scale			(1–12)	(13–24)	(25–40)	(41–50)
Standard Scale			(1–6)	(6–12)	(13–20)	(21–25)
Bay	Loc	Ht	SRV	MRV	LRV	ERV

Ammo: _____

Cost: _____ BV: _____

ARMOR DIAGRAM

Capital Scale



CREW DATA

Gunnery Skill: ___ Piloting Skill: ___

Hits Taken	1	2	3	4	5	6
Modifier	+1	+2	+3	+4	+5	Incp.

Crew: _____ Marines: _____

Passengers: _____ Elementals: _____

Other: _____ Battle Armor: _____

Life Boats/Escape Pods: ___ / ___

CRITICAL DAMAGE

Avionics +1 +2 +5 Life Support +2

CIC +2 +4 D

Sensors +1 +2 +5

Thrusters

Left +1 +2 +3 D

Right +1 +2 +3 D

Engine –1 –2 –3 –4 –5 D

VELOCITY RECORD

Turn #	1	2	3	4	5	6	7	8	9	10
Thrust										
Velocity										
Effective Velocity										

Turn #	11	12	13	14	15	16	17	18	19	20
Thrust										
Velocity										
Effective Velocity										

HEAT DATA

Heat Sinks: ___ (___)

Single ☐

Double ☐

Heat Generation Per Arc

Nose: _____

Left/Right Fore: _____ / _____

Left/Right Broadside: _____ / _____

Left/Right Aft: _____ / _____

Aft: _____

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BATTLETECH

SPACE STATION RECORD SHEET

SPACE STATION DATA

Type: _____

Name: _____ Tonnage: _____

Thrust: Tech Base:

Station Keeping Only — Clan ☐ Inner Sphere ☐

DropShip Capacity: _____

Fighters/Small Craft: ___ / ___ Launch Rate: _____

Weapons & Equipment Inventory

Capital Scale			(1–12)	(13–24)	(25–40)	(41–50)
Standard Scale			(1–6)	(6–12)	(13–20)	(21–25)
Bay	Loc	Ht	SRV	MRV	LRV	ERV

Ammo: _____

Cost: _____ BV: _____

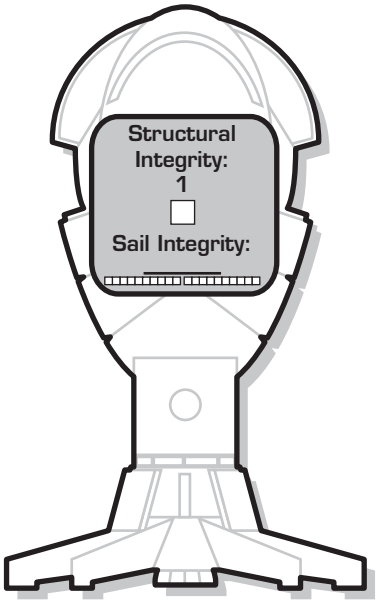
ARMOR DIAGRAM

Capital Scale

Nose Damage Threshold (Total Armor) ___ (___)

Fore-Left Damage Threshold (Total Armor) ___ (___)

Fore-Right Damage Threshold (Total Armor) ___ (___)



Aft-Left Damage Threshold (Total Armor) ___ (___)

Aft-Right Damage Threshold (Total Armor) ___ (___)

Aft Damage Threshold (Total Armor) ___ (___)

CREW DATA

Gunnery Skill: ___ Piloting Skill: ___

Hits Taken	1	2	3	4	5	6
Modifier	+1	+2	+3	+4	+5	Incp.

Crew: _____ Marines: _____

Passengers: _____ Elementals: _____

Other: _____ Battle Armor: _____

Life Boats/Escape Pods: ___ / ___

CRITICAL DAMAGE

Avionics +1 +2 +5 — Life Support +2

CIC +2 +4 D

Sensors +1 +2 +5

Thrusters

Left +1 +2 +3 D

Right +1 +2 +3 D

HEAT DATA

Heat Sinks: ___ (___)

Single ☐ Double ☐

Heat Generation Per Arc

Nose: ___

Left/Right Fore: ___ / ___

Left/Right Aft: ___ / ___

Aft: ___

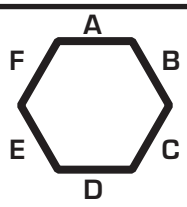
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BATTLETECH™

ADVANCED AEROSPACE MOVEMENT SHEET

Advanced Movement Compass



VELOCITY RECORD

Unit: _____

Turn #	Thrust	Facing	Velocity A	B	C	D	E	F	Fuel
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

ADVANCED MOVEMENT

A vector is active if thrust is applied while the unit is facing that hexside. A vector is inactive if the unit spends no thrust to move through that hexside.

Each time a unit spends thrust, note down that number on the record sheet in the appropriate vector (the vector of the unit's facing). Next, determine the effect of spending thrust by consolidating the active vectors.

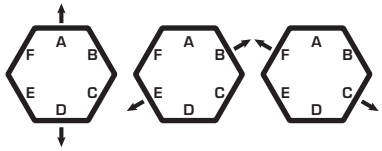
First, consolidate any active opposing vectors (see Opposing Vectors diagram) by subtracting the lowest thrust value from both vectors, reducing one vector to 0.

Next, consolidate the oblique vectors (see Oblique Vectors diagram). When any pair of oblique vectors is active, subtract the lowest of the two thrust values from both vectors (or from both if they are equal), reducing one (or both) oblique vectors to 0, and add the same value to the thrust value of the vector in between.

After consolidating all vectors, a unit should have no more than two active vectors.

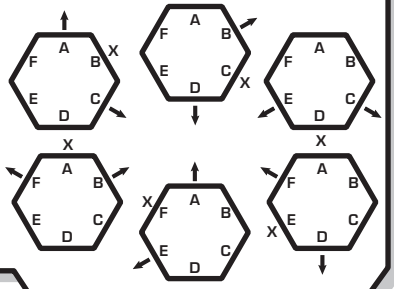
OPPOSING VECTORS

If both vectors marked with arrows are active, subtract an equal amount from both until only one of them is active.



OBLIQUE VECTORS

If both vector markers are active, subtract an equal amount from both and add that amount to vector X.



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VELOCITY RECORD

Unit: _____

Turn #	Thrust	Facing	Velocity A	B	C	D	E	F	Fuel
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

VELOCITY RECORD

Unit: _____

Turn #	Thrust	Facing	Velocity A	B	C	D	E	F	Fuel
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

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SQUADRON RECORD SHEET

SQUADRON DATA

Name: _____ Gunnery Skill: ____ Piloting Skill: ____ Safe Thrust: _____ Max Thrust: _____

Weapon Bay	Loc.	Starting#/ Current#	AV Each	Heat Each / Current Total	Range Bracket
		/		/	
		/		/	
		/		/	
		/		/	
		/		/	

Weapon Bay	Loc.	Starting#/ Current#	AV Each	Heat Each / Current Total	Range Bracket
		/		/	
		/		/	
		/		/	
		/		/	
		/		/	

Weapon Bay	Loc.	Starting#/ Current#	AV Each	Heat Each / Current Total	Range Bracket
		/		/	
		/		/	
		/		/	
		/		/	
		/		/	

Tech Base: Inner Sphere ☐ Clan ☐ Total Heat Capacity (Current): _____ (_____) Total Fuel: _____ SI: _____

FIGHTER DATA

Ftr #1: _____

Engine [2] [4] [D] Gear [+5]
Avionics [+1] [+2] [+5] Thrust
Sensors [+1] [+2] [+5] Safe: ___
FCS [+2] [+4] [D] Max: ___
Life Support [+2]

Total Armor/Fatal Threshold (___/___)

SI (___)

HS: (____)_____ Fuel: ____

Pilot [+1] [+2] [+3] [+4] [+5] [D] G/P: ___/___

Weapons and Equipment	Loc	Ht	AV/Range	Weapons and Equipment	Loc	Ht	AV/Range

Ftr #2: _____

Engine [2] [4] [D] Gear [+5]
Avionics [+1] [+2] [+5] Thrust
Sensors [+1] [+2] [+5] Safe: ___
FCS [+2] [+4] [D] Max: ___
Life Support [+2]

Total Armor/Fatal Threshold (___/___)

SI (___)

HS: (____)_____ Fuel: ____

Pilot [+1] [+2] [+3] [+4] [+5] [D] G/P: ___/___

Weapons and Equipment	Loc	Ht	AV/Range	Weapons and Equipment	Loc	Ht	AV/Range

Ftr #3: _____

Engine [2] [4] [D] Gear [+5]
Avionics [+1] [+2] [+5] Thrust
Sensors [+1] [+2] [+5] Safe: ___
FCS [+2] [+4] [D] Max: ___
Life Support [+2]

Total Armor/Fatal Threshold (___/___)

SI (___)

HS: (____)_____ Fuel: ____

Pilot [+1] [+2] [+3] [+4] [+5] [D] G/P: ___/___

Weapons and Equipment	Loc	Ht	AV/Range	Weapons and Equipment	Loc	Ht	AV/Range

Ftr #4: _____

Engine [2] [4] [D] Gear [+5]
Avionics [+1] [+2] [+5] Thrust
Sensors [+1] [+2] [+5] Safe: ___
FCS [+2] [+4] [D] Max: ___
Life Support [+2]

Total Armor/Fatal Threshold (___/___)

SI (___)

HS: (____)_____ Fuel: ____

Pilot [+1] [+2] [+3] [+4] [+5] [D] G/P: ___/___

Weapons and Equipment	Loc	Ht	AV/Range	Weapons and Equipment	Loc	Ht	AV/Range

Ftr #5: _____

Engine [2] [4] [D] Gear [+5]
Avionics [+1] [+2] [+5] Thrust
Sensors [+1] [+2] [+5] Safe: ___
FCS [+2] [+4] [D] Max: ___
Life Support [+2]

Total Armor/Fatal Threshold (___/___)

SI (___)

HS: (____)_____ Fuel: ____

Pilot [+1] [+2] [+3] [+4] [+5] [D] G/P: ___/___

Weapons and Equipment	Loc	Ht	AV/Range	Weapons and Equipment	Loc	Ht	AV/Range

Ftr #6: _____

Engine [2] [4] [D] Gear [+5]
Avionics [+1] [+2] [+5] Thrust
Sensors [+1] [+2] [+5] Safe: ___
FCS [+2] [+4] [D] Max: ___
Life Support [+2]

Total Armor/Fatal Threshold (___/___)

SI (___)

HS: (____)_____ Fuel: ____

Pilot [+1] [+2] [+3] [+4] [+5] [D] G/P: ___/___

Weapons and Equipment	Loc	Ht	AV/Range	Weapons and Equipment	Loc	Ht	AV/Range

VELOCITY RECORD

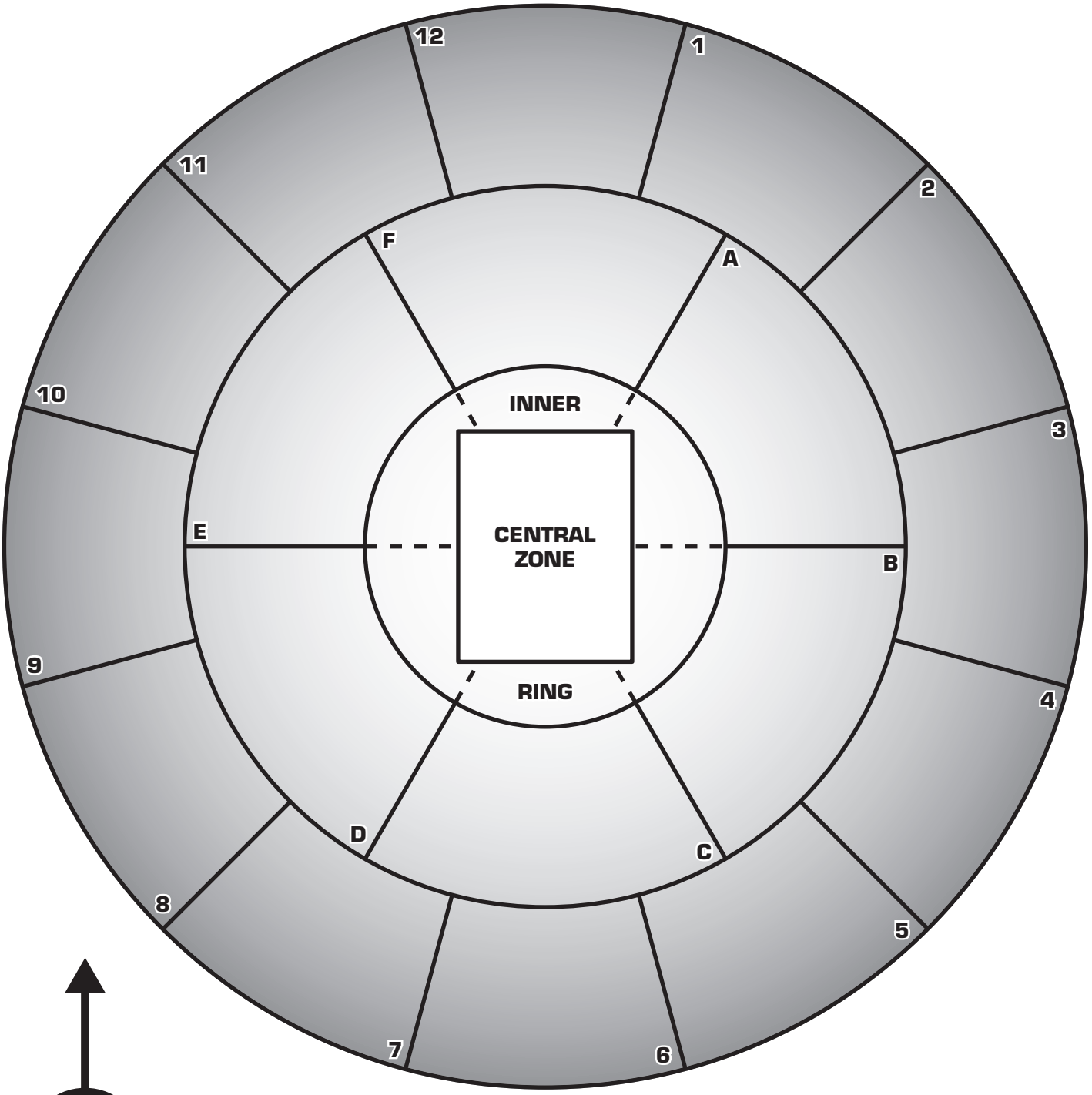
Turn #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Thrust																				
Velocity																				
Effective Velocity																				
Altitude																				
Fuel																				
Overheat																				

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RADAR MAP



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HIGH SPEED CLOSING ENGAGEMENTS SHEET

PLAYER _____

Engagement Speed: _____ **Angle of Attack:** _____

Unit	Ship/Squadron/ Mines/Debris	Detection Phase	Capital Missile Phase		Meeting Engagement Phase	
		Maneuver	Maneuver	Target(s)	Maneuver	Target(s)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

CHARTS AND TABLES

SEQUENCE OF PLAY

1. Detection and Initial Maneuver Phase
   - Determine Detection
   - Launch and Redeploy Units
   - Detection Maneuvering
2. Capital Missile Phase
   - Capital Missile Maneuvers
   - Capital Missile Attacks
3. Meeting Engagement Phase
   - Meeting Engagement Maneuvers
   - Meeting Engagement Weapons Fire
   - Mine/Debris/Collisions
   - Chaser Weapons Fire
4. End Phase
   - Recover Detached Units

FIGHTER AND SMALL CRAFT DEPLOYMENT TABLE

1D6	% of Units Deployment*
1	15%
2	30%
3	45%
4	60%
5	75%
6	90%

*In all cases, round down to the nearest whole fighter and small craft

RANDOM ENGAGEMENT SPEED TABLE†

2D6 Roll	Speed Class
2	Fast
3	Medium
4	Medium
5	Slow
6	Slow
7	Slow
8	Slow
9	Slow
10	Medium
11	Medium
12	Fast

ANGLE OF ATTACK TABLE†

2D6 Roll	Angle of Attack (AoA)
2	Crossing
3	Crossing
4	Crossing
5	Head On
6	Head On
7	Head On
8	Head On
9	Head On
10	Head On
11	Crossing
12	Crossing

†Players may simply agree on an Engagement Speed and Angle of Attack in place of rolling on these tables.

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INNER SPHERE/PERIPHERY RECORD SHEET

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Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Notes: _____

Special Abilities: _____

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Notes: _____

Special Abilities: _____

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure

Heat Scale: 1 2 3 S

Notes: _____

Special Abilities: _____

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COMSTAR RECORD SHEET

CATALYST game labs

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

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BATTLETECH
BATTLEFORCE



CLAN RECORD SHEET

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐

MV	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○○○○○○○○○

Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

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BATTLETECH
BATTLEFORCE



AEROSPACE RECORD SHEET

CATALYST game labs

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

Unit Name: _____ Weight Class: _____

Point Value: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

Heat Scale: 1 2 3 S

Special Abilities: _____

Element: _____ Destroyed ☐



TP	S (+0)	M (+2)	L (+4)	E (+6)	Wt.	Skill	OV
___	___	___	___	___	___	___	___

Armor/Structure ○○○○○○○○○○○○○○○○○○○○ ●●●●●●●●●● Threshold: _____

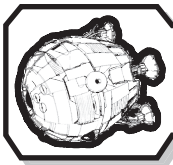
Heat Scale: 1 2 3 S

Special Abilities: _____

Notes: _____

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BATTLETECH
BATTLEFORCE



DROPSHIP RECORD SHEET

CATALYST game labs

Unit Name: _____ **Size Class:** _____ **Point Value:** _____

Element: _____ **Destroyed** ☐ **Notes:** _____

Skill: ____ **TP:** ____



Standard	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Sub-Capital	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Capital Msl.	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Armor/Structure Threshold: ____

Special Abilities: _____

Unit Name: _____ **Size Class:** _____ **Point Value:** _____

Element: _____ **Destroyed** ☐ **Notes:** _____

Skill: ____ **TP:** ____



Standard	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Sub-Capital	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Capital Msl.	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Armor/Structure Threshold: ____

Special Abilities: _____

Unit Name: _____ **Size Class:** _____ **Point Value:** _____

Element: _____ **Destroyed** ☐ **Notes:** _____

Skill: ____ **TP:** ____



Standard	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Sub-Capital	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Capital Msl.	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Armor/Structure Threshold: ____

Special Abilities: _____

Unit Name: _____ **Size Class:** _____ **Point Value:** _____

Element: _____ **Destroyed** ☐ **Notes:** _____

Skill: ____ **TP:** ____



Standard	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Sub-Capital	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Capital Msl.	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Armor/Structure Threshold: ____

Special Abilities: _____

Unit Name: _____ **Size Class:** _____ **Point Value:** _____

Element: _____ **Destroyed** ☐ **Notes:** _____

Skill: ____ **TP:** ____



Standard	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Sub-Capital	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Capital Msl.	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Armor/Structure Threshold: ____

Special Abilities: _____

Unit Name: _____ **Size Class:** _____ **Point Value:** _____

Element: _____ **Destroyed** ☐ **Notes:** _____

Skill: ____ **TP:** ____



Standard	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Sub-Capital	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

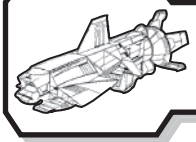
Capital Msl.	S (+0)	M (+2)	L (+4)	E (+6)
Fore:				
Left:				
Right:				
Aft:				

Armor/Structure Threshold: ____

Special Abilities: _____

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WARSHIP RECORD SHEET

CATALYST game labs

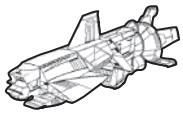
Unit Name: _____ Point Value: _____

Element: _____ Destroyed ☐

Size Class: _____

TP: _____

Skill: _____



CAPITAL WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

CAPITAL MISSILE WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

SUB-CAPITAL MISSILE WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

STANDARD WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

Armor: _____ Threshold: _____

Structure: _____

Special Abilities: _____

Notes: _____

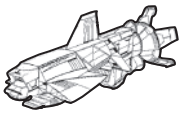
Unit Name: _____ Point Value: _____

Element: _____ Destroyed ☐

Size Class: _____

TP: _____

Skill: _____



CAPITAL WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

CAPITAL MISSILE WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

SUB-CAPITAL MISSILE WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

STANDARD WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
LBS/RBS:				
AL/AR:				
Aft:				

Armor: _____ Threshold: _____

Structure: _____

Special Abilities: _____

Notes: _____

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BATTLETECH
BATTLEFORCE



JUMPSHIP, SPACE STATION, AND SATELLITE RECORD SHEET

CATALYST game labs

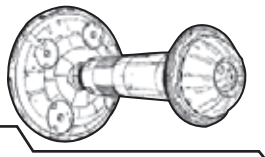
Unit Name: _____ Point Value: _____

Element: _____ Destroyed ☐

Size Class: _____

TP: _____

Skill: _____



CAPITAL WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
AL/AR:				
Aft:				

CAPITAL MISSILE WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
AL/AR:				
Aft:				

SUB-CAPITAL WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
AL/AR:				
Aft:				

STANDARD WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
AL/AR:				
Aft:				

Armor: _____ Threshold: _____

Structure: _____

Special Abilities: _____

Notes: _____

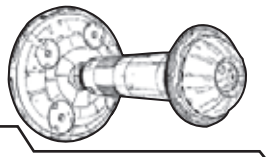
Unit Name: _____ Point Value: _____

Element: _____ Destroyed ☐

Size Class: _____

TP: _____

Skill: _____



CAPITAL WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
AL/AR:				
Aft:				

CAPITAL MISSILE WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
AL/AR:				
Aft:				

SUB-CAPITAL WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
AL/AR:				
Aft:				

STANDARD WEAPONS

Arc	S (+0)	M (+2)	L (+4)	E (+6)
Nose:				
FL/FR:				
AL/AR:				
Aft:				

Armor: _____ Threshold: _____

Structure: _____

Special Abilities: _____

Notes: _____

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BATTLETECH
BATTLEFORCE



LARGE SUPPORT VEHICLE RECORD SHEET

CATALYST game labs

Unit Name: _____ Size Class: _____ Template: _____ Point Value: _____

Element: _____ Destroyed ☐ Notes: _____

Skill: ____

MV: ____



	S (+0)	M (+2)	L (+4)	E (+6)	Armor/Structure
Fore:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Left:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Right:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Aft:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 1:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 2:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 3:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 4:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 5:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 6:	____	____	____	____	●●●●●●●●●●●●●●●●●●●●●●
Turret 7:	____	____	____	____	Special Abilities: _____
Turret 8:	____	____	____	____	_____

Unit Name: _____ Size Class: _____ Template: _____ Point Value: _____

Element: _____ Destroyed ☐ Notes: _____

Skill: ____

MV: ____



	S (+0)	M (+2)	L (+4)	E (+6)	Armor/Structure
Fore:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Left:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Right:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Aft:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 1:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 2:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 3:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 4:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 5:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 6:	____	____	____	____	●●●●●●●●●●●●●●●●●●●●●●
Turret 7:	____	____	____	____	Special Abilities: _____
Turret 8:	____	____	____	____	_____

Unit Name: _____ Size Class: _____ Template: _____ Point Value: _____

Element: _____ Destroyed ☐ Notes: _____

Skill: ____

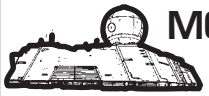
MV: ____



	S (+0)	M (+2)	L (+4)	E (+6)	Armor/Structure
Fore:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Left:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Right:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Aft:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 1:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 2:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 3:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 4:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 5:	____	____	____	____	○○○○○○○○○○○○○○○○○○○○○○
Turret 6:	____	____	____	____	●●●●●●●●●●●●●●●●●●●●●●
Turret 7:	____	____	____	____	Special Abilities: _____
Turret 8:	____	____	____	____	_____

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BATTLETECH
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MOBILE STRUCTURE RECORD SHEET

CATALYST game labs

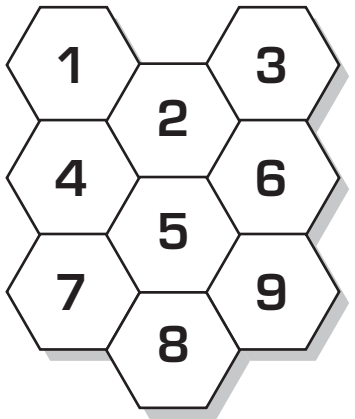
Unit Name: _____ Point Value: _____

MV: _____ Skill: _____ Destroyed ☐

Special Abilities: _____

Notes: _____

STRUCTURE MAP



HEX 1
Armor: (____) _____
Structure-T: (____-____) _____

	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

HEX 2
Armor: (____) _____
Structure-T: (____-____) _____

	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

HEX 3
Armor: (____) _____
Structure-T: (____-____) _____

	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

HEX 4
Armor: (____) _____
Structure-T: (____-____) _____

	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

HEX 5
Armor: (____) _____
Structure-T: (____-____) _____

	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

HEX 6
Armor: (____) _____
Structure-T: (____-____) _____

	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

HEX 7
Armor: (____) _____
Structure-T: (____-____) _____

	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

HEX 8
Armor: (____) _____
Structure-T: (____-____) _____

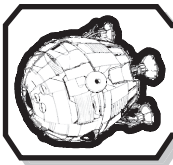
	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

HEX 9
Armor: (____) _____
Structure-T: (____-____) _____

	S (+0)	M (+2)	L (+4)	E (+6)
Capital:	____	____	____	____
Cap. Missile:	____	____	____	____
Sub Capital:	____	____	____	____
Standard:	____	____	____	____
Turret:	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____
_____	____	____	____	____

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BATTLETECH
BATTLEFORCE



SQUADRON RECORD SHEET

Unit Name: _____ Point Value: _____

Skill: _____

SQUADRON ATTACK VALUES

DROPSHIP/SMALL CRAFT STANDARD WEAPONS

Short (+0)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Medium (+2)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Long (+4)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Extreme (+6)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

DROPSHIP/SMALL CRAFT CAPITAL MISSILE WEAPONS

Short (+0)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Medium (+2)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Long (+4)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Extreme (+6)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

DROPSHIP/SMALL CRAFT SUB-CAPITAL WEAPONS

Short (+0)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Medium (+2)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Long (+4)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

Extreme (+6)	6	5	4	3	2	1
Nose						
Wing						
Side						
Aft						

FIGHTER SQUADRON

Fighter	TP	Armor/Structure
		○○○○○○○○○○ ○○○○○○○○
		○○○○○○○○○○ ○○○○○○○○
		○○○○○○○○○○ ○○○○○○○○
		○○○○○○○○○○ ○○○○○○○○
		○○○○○○○○○○ ○○○○○○○○
		○○○○○○○○○○ ○○○○○○○○

	Damage By Number Successful					
Range	6	5	4	3	2	1
Short (+0)						
Medium (+2)						
Long (+4)						
Extreme (+6)						

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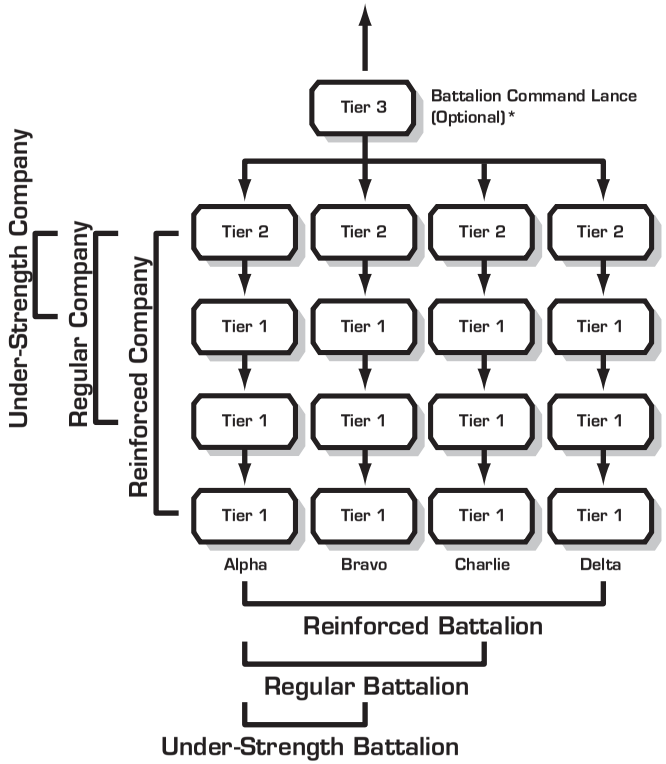
BATTLETECH
BATTLEFORCE

CHAIN OF COMMAND DIAGRAMS

Inner Sphere/Periphery Battalion

Formation Name: _____

Superior Formation: _____

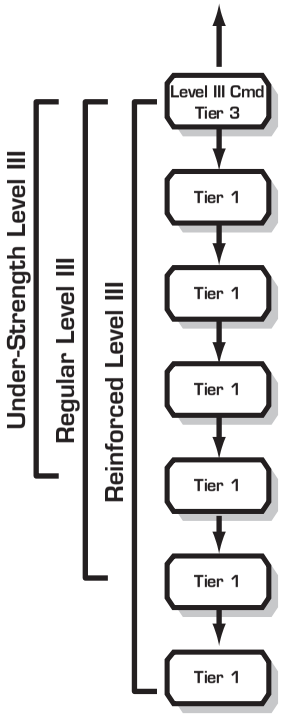


*Alpha Tier 2 becomes Battalion Command (Tier 3) if Battalion Command Lance is not used.

Level III

Formation Name: _____

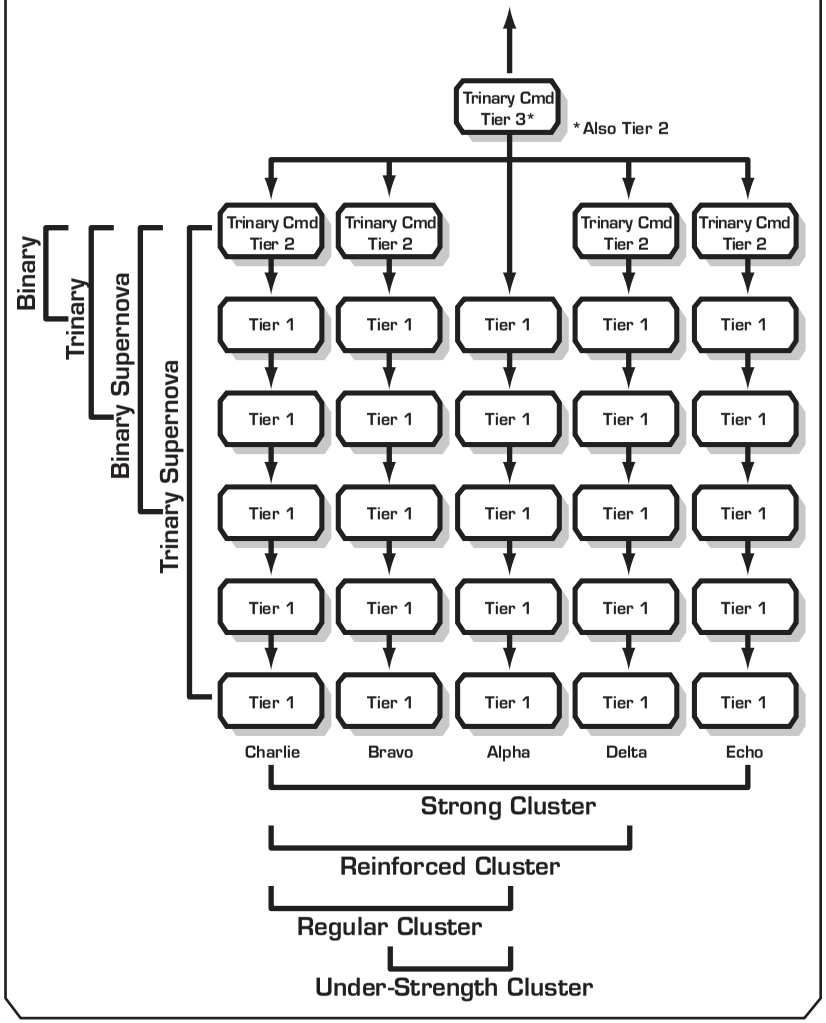
Superior Formation: _____



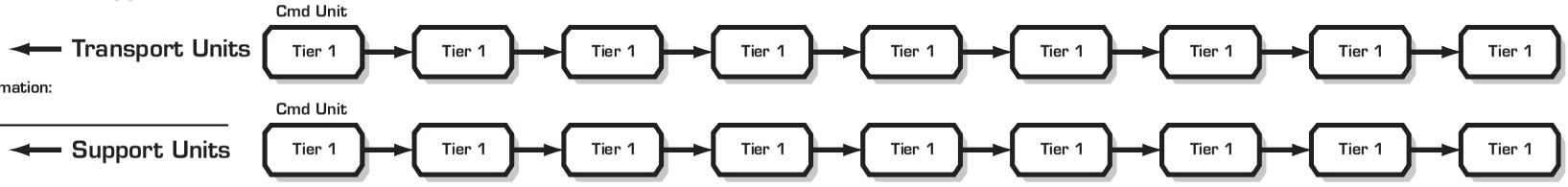
Clan Cluster

Formation Name: _____

Superior Formation: _____



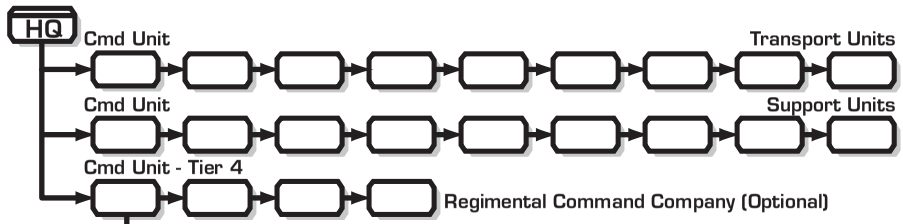
Transport and Support

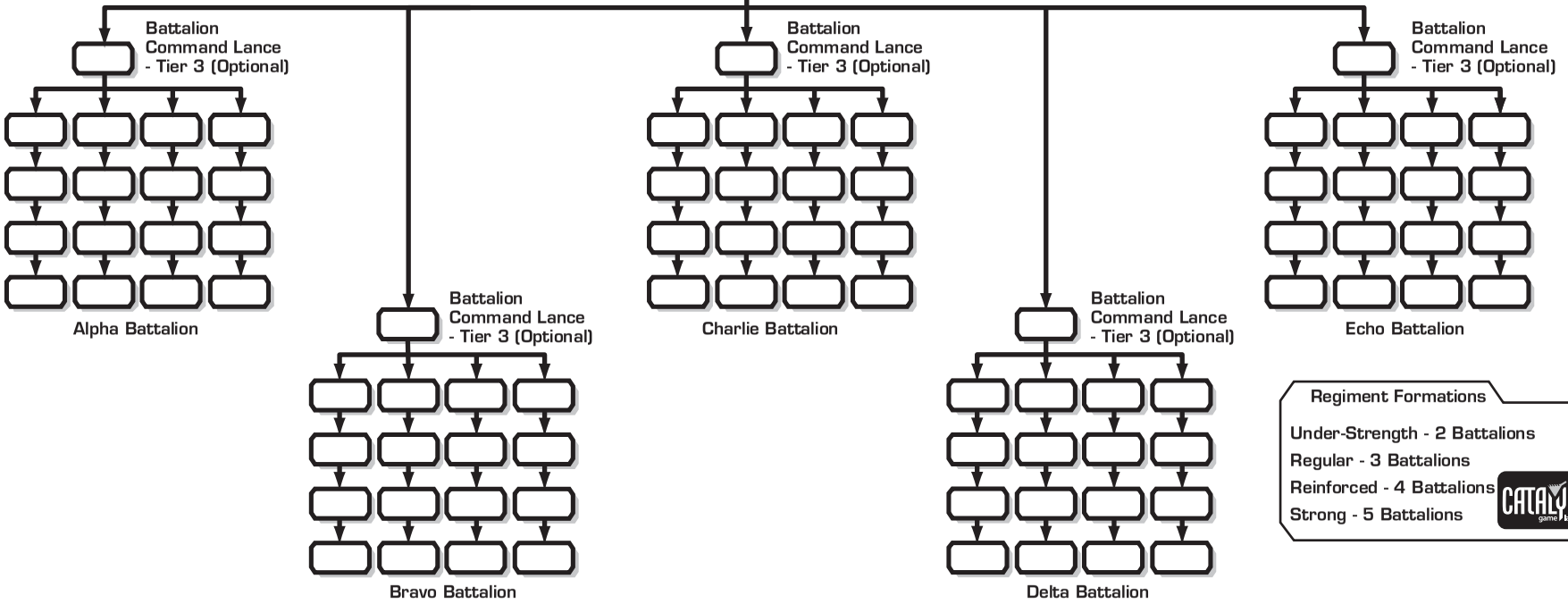


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BATTLETECH
BATTLEFORCE

INNER SPHERE/PERIPHERY CHAIN OF COMMAND SHEET





Regiment Formations

Under-Strength - 2 Battalions
Regular - 3 Battalions
Reinforced - 4 Battalions
Strong - 5 Battalions

Alpha Command List

1		6	
2		7	
3		8	
4		9	
5		10	

Bravo Command List

1		6	
2		7	
3		8	
4		9	
5		10	

Charlie Command List

1		6	
2		7	
3		8	
4		9	
5		10	

Delta Command List

1		6	
2		7	
3		8	
4		9	
5		10	

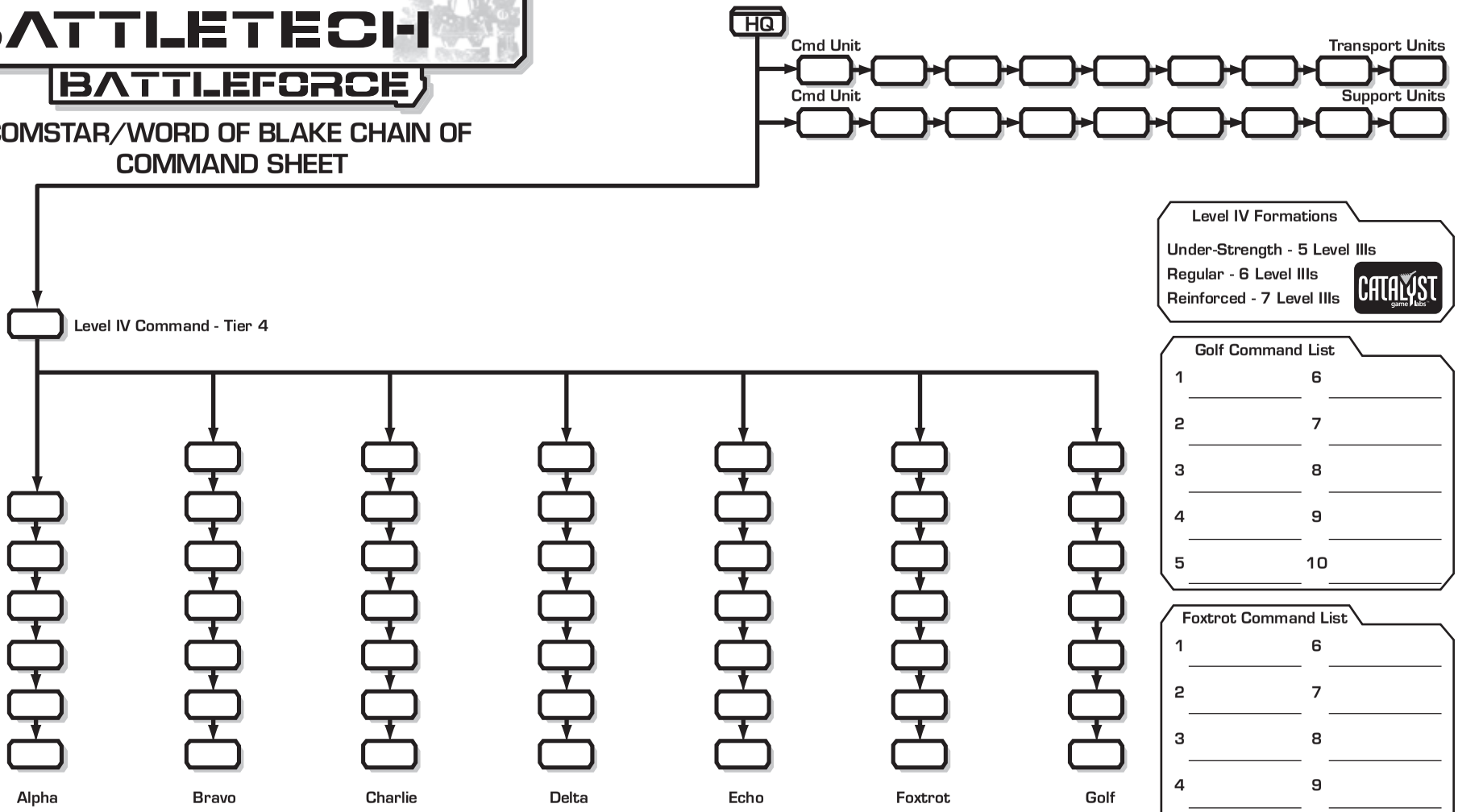
Echo Command List

1		6	
2		7	
3		8	
4		9	
5		10	

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BATTLETECH
BATTLEFORCE

COMSTAR/WORD OF BLAKE CHAIN OF COMMAND SHEET



Level IV Formations

Under-Strength - 5 Level IIIs
Regular - 6 Level IIIs
Reinforced - 7 Level IIIs

Golf Command List

1		6	
2		7	
3		8	
4		9	
5		10	

Foxtrot Command List

1		6	
2		7	
3		8	
4		9	
5		10	

Alpha Command List

1		6	
2		7	
3		8	
4		9	
5		10	

Bravo Command List

1		6	
2		7	
3		8	
4		9	
5		10	

Charlie Command List

1		6	
2		7	
3		8	
4		9	
5		10	

Delta Command List

1		6	
2		7	
3		8	
4		9	
5		10	

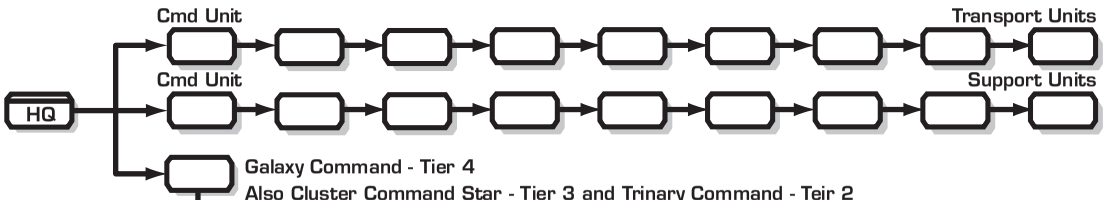
Echo Command List

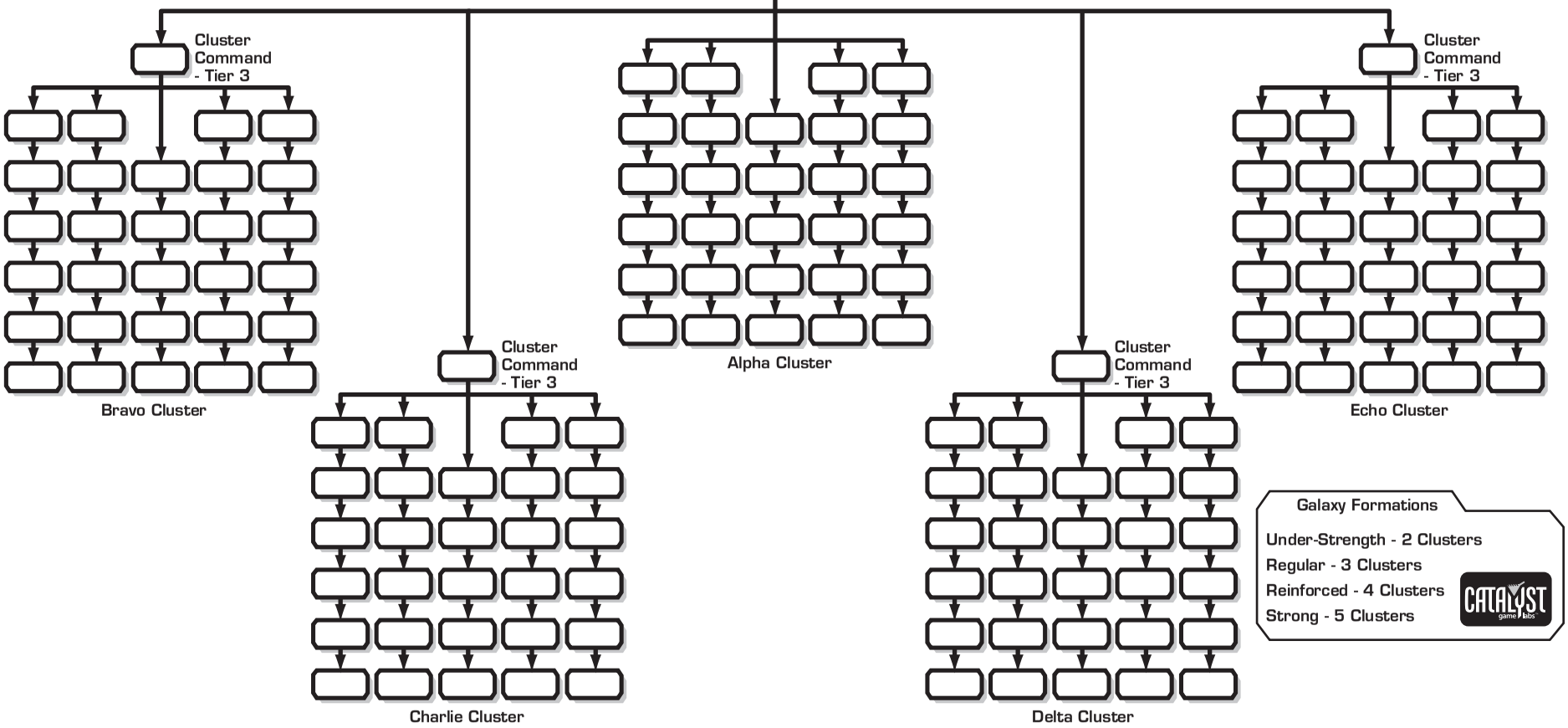
1		6	
2		7	
3		8	
4		9	
5		10	

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BATTLETECH
BATTLEFORCE

CLAN CHAIN OF COMMAND SHEET





Galaxy Formations

Under-Strength - 2 Clusters
Regular - 3 Clusters
Reinforced - 4 Clusters
Strong - 5 Clusters

Alpha Command List			
1		6	
2		7	
3		8	
4		9	
5		10	

Bravo Command List			
1		6	
2		7	
3		8	
4		9	
5		10	

Charlie Command List			
1		6	
2		7	
3		8	
4		9	
5		10	

Delta Command List			
1		6	
2		7	
3		8	
4		9	
5		10	

Echo Command List			
1		6	
2		7	
3		8	
4		9	
5		10	

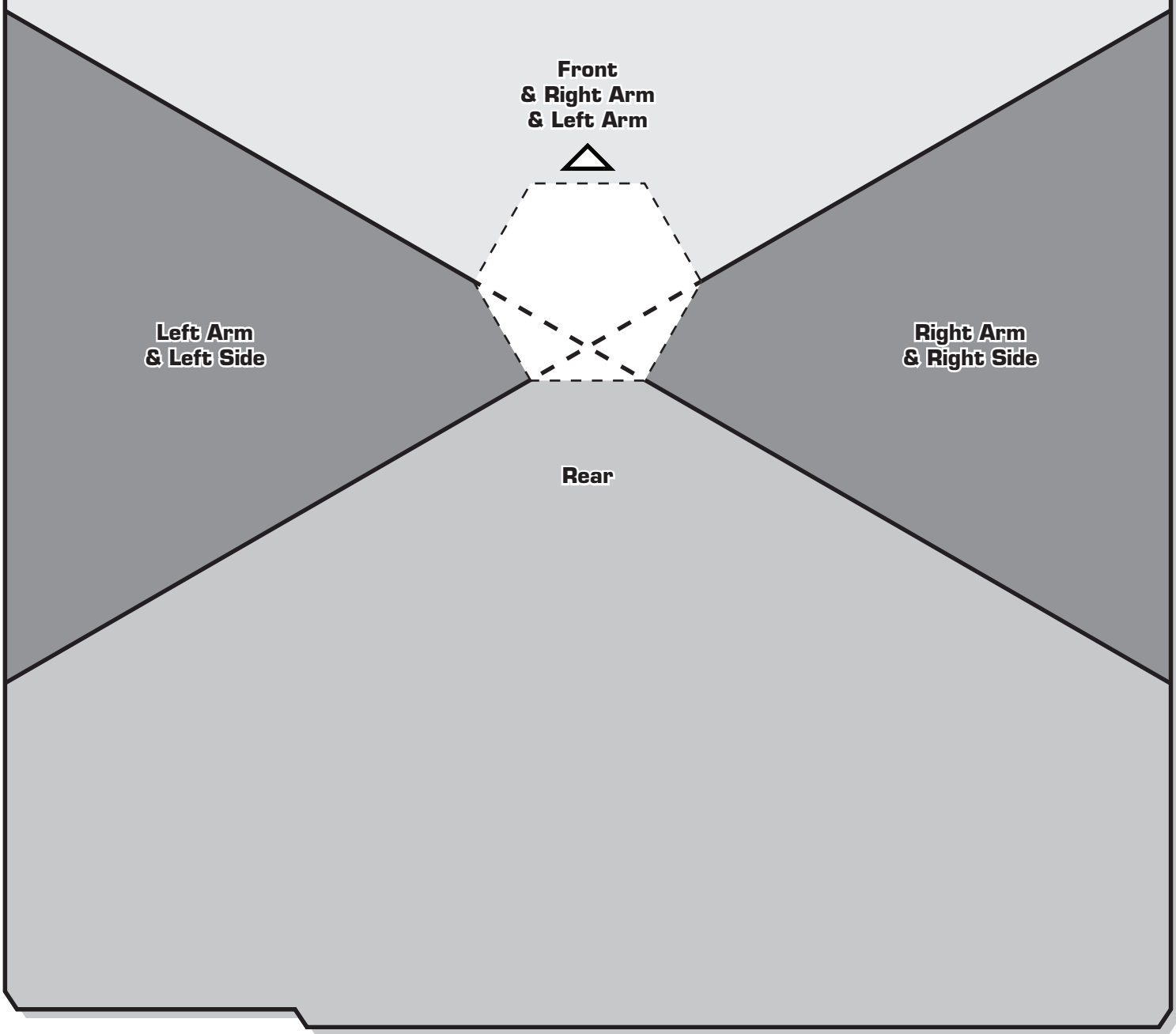
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BATTLETECH™

MINIATURES RULES

FIRING ARCS TEMPLATE

Instructions: To use the Firing Arcs Template, cut out the hex in the center along the dotted outline; position the template over the miniature, aligning the template's front hexside (designated by the arrow) to the miniature's front hexside.

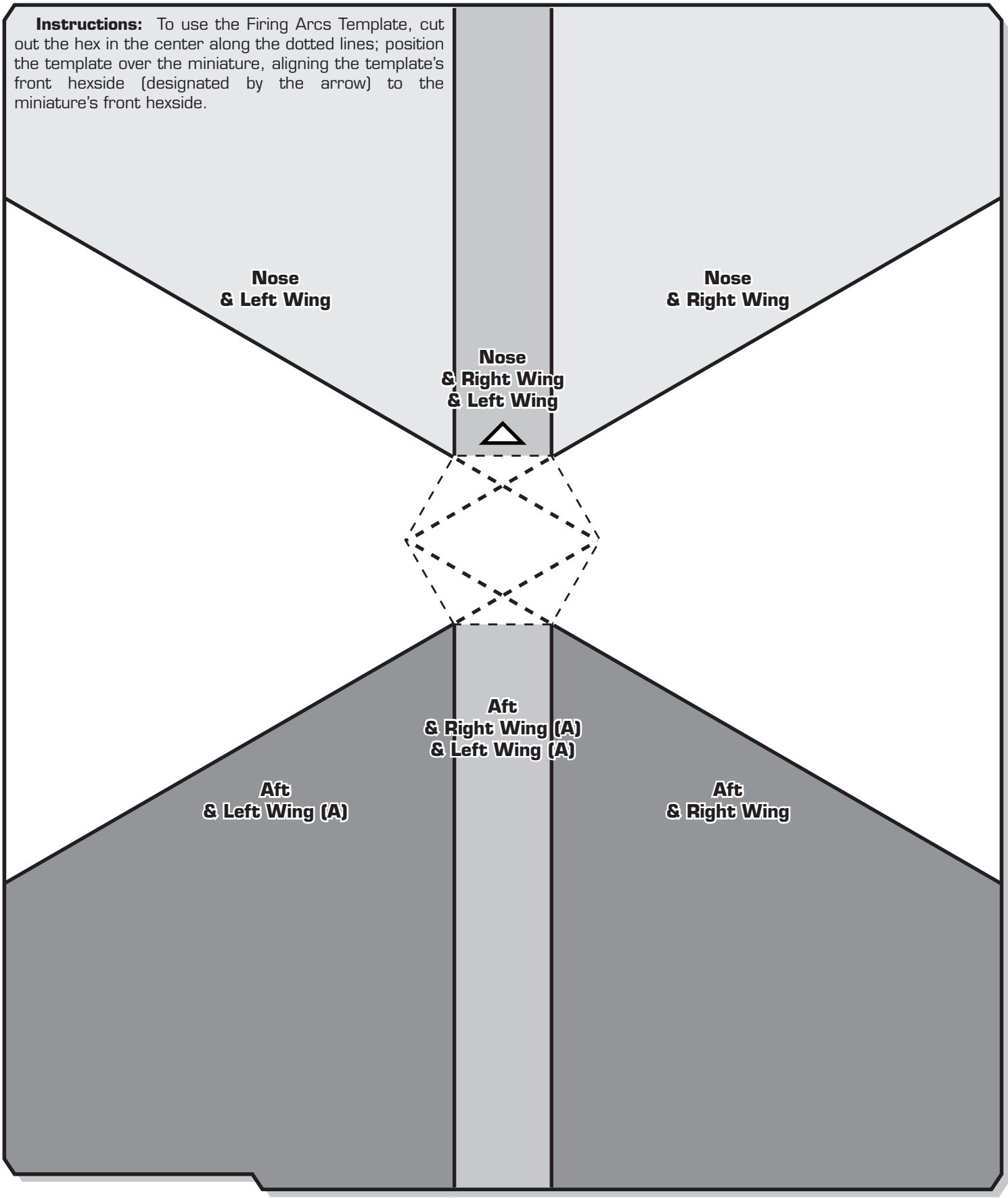


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BATTLETECH
MINIATURES RULES

AERODYNE FIRING ARCS TEMPLATE

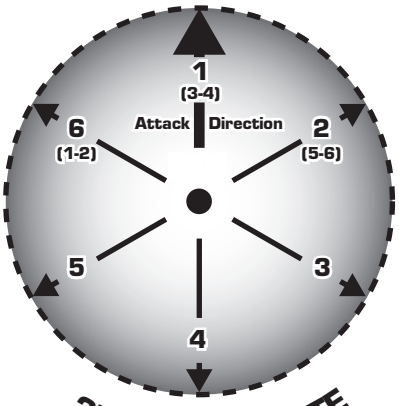
Instructions: To use the Firing Arcs Template, cut out the hex in the center along the dotted lines; position the template over the miniature, aligning the template's front hexside (designated by the arrow) to the miniature's front hexside.



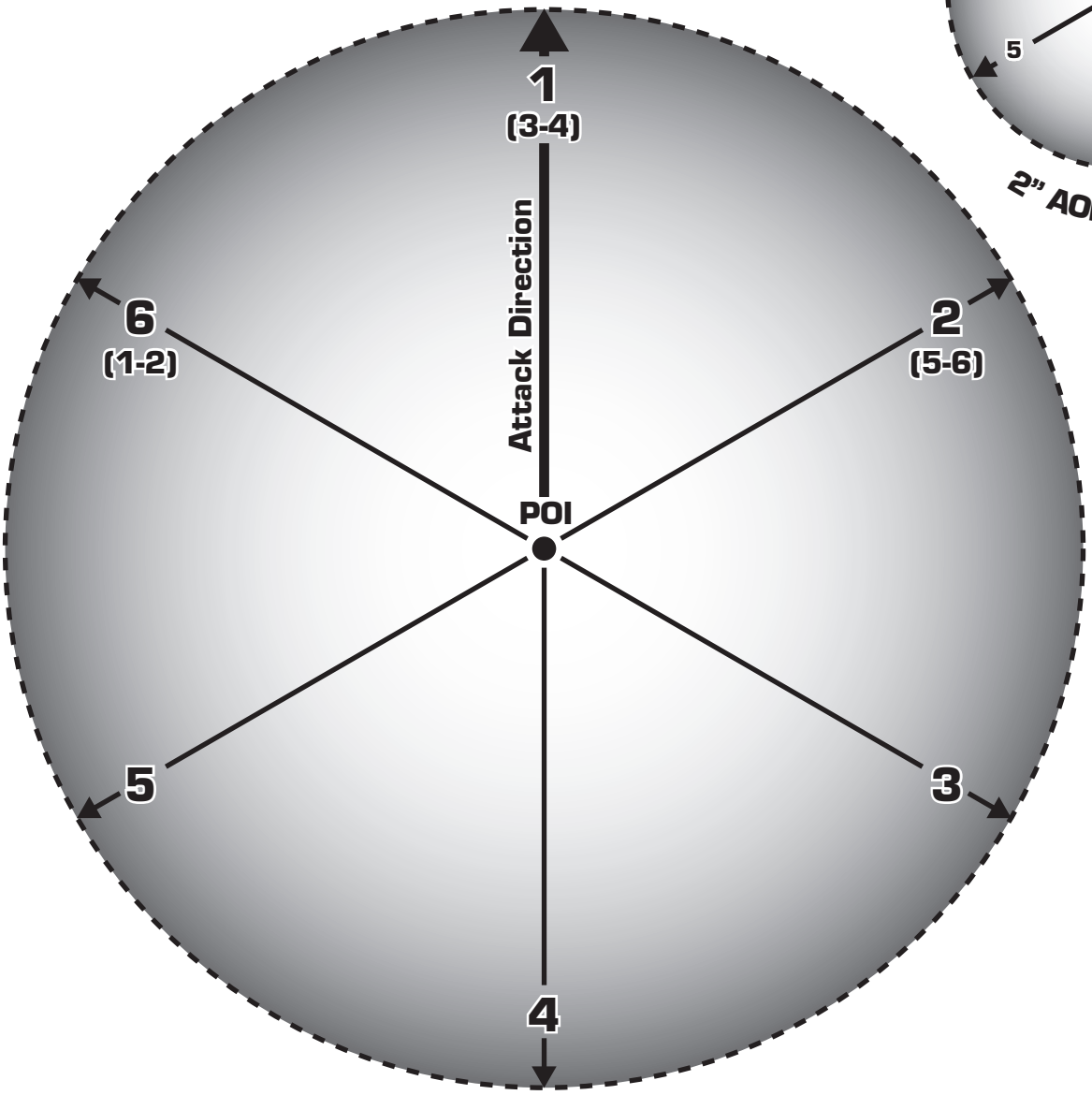
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BATTLETECH
MINIATURES RULES

AREA OF EFFECT TEMPLATES



2" AOE TEMPLATE



6" AOE TEMPLATE

ATTACK PATH

STRAFING TEMPLATE - UP TO 10" LONG

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BATTLETECH™

UNIT MAINTENANCE WORKSHEET

UNIT _____

Type: _____ Maintenance Time: _____ Tech Level: _____ Overall Quality Rating: _____

UNIT DAMAGE AND DEFECTS

Component	Tech Level	Quality Rating	Time	Notes

Notes: _____

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CONVERSION OF GROUND UNITS TO FIGHTERS TABLE

BattleMechs/ProtoMechs
Thrust Rating: Jumping MP ÷ 3 (round down)
Fuel: Jumping MP x 2
Offensive Systems: Use the weapon Damage Values as presented on pages 303-305 of *TW* and pp. 404-417 of *TO*. Note that these weapons have significantly reduced ranges in aerospace engagements (see Aerospace Weapon Range Table, p. 235, *TW*). Standard ground unit arcs apply. Melee weapons may not be used, with certain exceptions (see *Zero-G Ground Unit Combat*, p. 119).
Armor: A 'Mech's armor remains in the standard locations

Battle Armor (BA squads/Points are treated as single units.)
Thrust Rating: Jumping MP ÷ 3 (round down)
Fuel: Jumping MP x 6 + any fuel tanks
Offensive Systems: Use the weapon Damage Values as presented on pages 303-305 of *TW* and pp. 404-417 of *TO*, allocating all to a hypothetical Nose arc.
Armor: Total the Armor Points (excluding the 00 box for the soldier) for all the troopers in the battle armor formation. If a unit is not equipped with Space Operations Adaptations (see p. 269, *TM*), divide this total by 2.

Conventional Infantry (Marines)
Thrust Rating: Jump Rating ÷ 3 (round down)
Fuel: Jump Rating x 2
Offensive Systems: Per weapons load-out
Armor: Conventional infantry troops normally do not mount armor (each point of damage normally eliminates a single trooper); even when they do wear armor, it is treated differently (see *Infantry Armor*, p. 317, *TO*).

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SEARCH AND RESCUE MODIFIERS TABLE

Situation	Modifier
General	
Enemy in control of the battlefield	+2
Ground	
SAR force includes VTOL or WiGE	–1
SAR force has Improved Sensors	–1
SAR force has Active Probe	–2
Space	
Not in planetary orbit	+2
SAR force includes Small Craft*	–1
SAR force includes DropShip*	–2
SAR force includes WarShip*	–3

* Use largest modifier only

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RECOMMENDED FIGHTER SQUADRON FORMATION TABLE

Affiliation	Force Size (Fighters per Squadron)
Clan Star (All)	10 (Split 5/5 or 6/4 in two squadrons)
Inner Sphere	
Generic/Mercenary	6
Capellan Confederation	6
Draconis Combine	6
Federated Suns	6
Free Rasalhague Republic	4
Lyran Alliance	6
ComStar/Word of Blake	6
Periphery (General)*	6
Marian Hegemony	10 (Split 5/5 or 6/4 in two squadrons)
Taurian Concordat	4
Calderon Protectorate	4
Additional Formations	**Force Size (# of Fighters)**
Clan Aerospace Point	2
Inner Sphere Flight	2
Capellan Flight	3

*Includes Circinus Federation, Magistracy of Canopus, Niops Association, Outworlds Alliance, Nueva Castile, Hanseatic League and pirates

PAGE 25

HULL LANDING MODIFIERS TABLE

Situation	Modifier
No fuel remaining	+2
Relative velocity	See *Landing on the Hull*, see p. 25
Target is Out of Control	+3
'Mechs	
BattleMech armor facing destroyed	+1 facing
Has Hatchet/Sword	–1
Has Claws or Talons	–1
Has Claws and Talons	–2
Battle Armor	
Space Operations Adaptations	–1
Has Claws and/or Magnets	–1
Has Heavy Battle Claw	–1
No manipulators	+1

PAGE 25

FAILED HULL LANDING TABLE

Margin of Failure	Effect*
1	Hard landing. Unit takes 1D6 x Base Landing Damage.
2	Hard landing. Unit takes 2D6 x Base Landing Damage.
3	Collision. Unit bounces off the hull, taking 2D6 x Base Landing Damage, and fails to land.
4	Collision. Unit bounces off the hull, taking 2D6 x Base Landing Damage, and fails to land.
5	Collision. Unit bounces off the hull, taking 3D6 x Base Landing Damage, and fails to land.
6+	Unit misses target craft. May not make any other movement this turn.

*All damage is standard-scale. In all cases, the target takes a quarter of the damage applied to the landing unit (round down).

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CARGO TRANSPORT TABLE

Results in Tons/Minute[1]

Method[2]	Base Modifier
Human	0.2
Animal (Creature Size)[3]	
Large	1
Very Large	1.5
Exoskeleton (including BA)	1
ProtoMech	Mass/15
Vehicle	Mass/60
'Mech[4]	Mass/30
Lifter Type	**Modifiers**
Cargo Manipulator[5]	1.2
Lift Hoist	1.2
Zero-G Gear[6]	1.75
Light Cargo Platform	2
Heavy Cargo Platform	4
Cargo Type	**Modifiers**
Containerized[7]	5
Liquid	5
Null-G Pack	2.5
Planetary Conditions[8]	**Modifiers**
Zero-G[9]	0.2
Vacuum[10]	0.75
Tainted Atmosphere	0.8
Trace or Very High Pressure Atmosphere	0.9
Extreme Temperatures[11]	0.8
Heavy Snowfall/Ice Storm/ Lightning Storm/Strong Gale/ Torrential Downpour	0.75
Blizzard/Storm/Tornado	0.5
Moonless Night/Solar Flare[12]	0.75
Pitch Black[12]	0.5

[1]This assumes the cargo is in loose, palletized format that must be "broken" from the holds ("break bulk cargo").
[2]If loading or unloading to a unit, the number of methods (whether all the same or different) cannot be greater than the number of doors the unit mounts.
[3]See *Beast-Mounted Infantry*, p. 295, *TO*.
[4]'Mech must have two working hand actuators; if a 'Mech only has one working hand actuator, modifier is mass/50. A 'Mech cannot move cargo if it does not have any working hand actuators.
[5]Cargo lifter manipulators (see p. 229, *TW*).
[6]Only in zero-G and vacuum.
[7]Cargo is in standard cargo containers (see p. 239, *TM*).
[8]If outside of a sealed structure/ building/unit.
[9]Assumes a standard Terran gravity. If using different gravities (see *High/ Low Gravity*, p. 55, *TO*), above 0.2G, divide the cargo moved by the square root of the gravity in G's.
[10]Must have a sealed suit/vehicle/'Mech/ and so on (see *Vacuum*, p. 54, *TO*).
[11]If higher than 50 degrees C, or less than –30 degrees C.
[12]If no lights/cover available.

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MORALE RATINGS TABLE

Morale Rating	Combat Modifiers	Non-Combat Modifiers	Desertion Check Target Number	Mutiny Check Target Number
1 (Unbreakable)	+1	+2	0	0
2 (Very High)	+1	+1	0	0
3 (High)	+0	+1	0	0
4 (Normal)	+0	+0	2	0
5 (Low)	+0	–1	5	4
6 (Very Low)	–1	–1	5	4
7 (Broken)	–2	–2	8	7

Situational Modifiers	Modifiers
*Force Quality**	
Green	–1
Regular	+0
Veteran	+1
Elite	+2
Force Allegiance	
Clan	+1
House/Periphery	+0
Mercenary	–1
Force Type	
'Mech	+1
ProtoMech	+1
Vehicle	+0
Infantry	–1
Battle Armor	+0
Fighter	+1
Medical Personnel (see p. 169)	+1

Situational Modifiers	Modifiers
Technical Personnel (see p. 168)	–1
Other Non-Combat Staff†	–2
Small Craft	–1
DropShip (Military)	+0
DropShip (Civilian)	–1
JumpShip (Military	–1
JumpShip (Civilian)	–2
WarShip	+2
Space Station	–2
Force Loyalty‡	
Fanatical	+1
Reliable	+0
Questionable	–1
Other	
Force has Military Police	+1
Force has suffered desertion§	–1
Force has suffered mutineers§	–3

*See *Force Quality*, p. 38. †Including crew of Support Vehicles ‡ See *Force Loyalty*, p. 39.

§The time frame for these two modifiers is based on the Force Quality, with the following values representing a number of Morale/Fatigue Cycles: Elite = 1; Veterans = 2; Regular = 3; Green = 4. For example, for an Elite force, these modifiers are only applied if the force suffered a desertion/mutineer in the previous Morale/Fatigue Cycles; if it suffered a desertion/mutineer two Morale/Fatigue Cycles in the past, the modifiers do not apply. A Green force, however, must have four Morale/Fatigue Cycles pass without a desertion/mutineer for these modifiers to no longer apply for a new Morale/Fatigue Cycle.

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COMBAT ORDERS TABLE

Combat Orders
Fight: A Unit with this order is actively seeking to engage the enemy and may be considered the aggressor in a scenario (see *Determining Attacker and Defender* below). If more than one Unit receives the Fight order, the player should specify whether the Units are working together as a combined Force (in which case they are treated as a single Unit when determining their opposition) or as distinct forces.
Scout: A Unit given the Scout order will seek to make contact with the enemy Force to determine its strength and position, but will attempt to avoid a pitched battle.
Defend: A Unit with this order is combat ready but not actively seeking battle or enemy forces.

Non-Combat Orders
Move: A Unit with this order may make a strategic move (if maps are being used to determine location) at twice its normal movement rate, but is not ready to fight.
Repair: A Unit with this order may repair constituent Elements according to the standard repair and salvage rules (see p. 166) as the time allocated to the Strategic Turn allows. Such Units may not move or fight.
Rest: If the Fatigue rules (see p. 41) are being used, the Unit will reduce its Fatigue Points by 1 providing it is not attacked during the current turn.
Supply: A Unit with this order may spend unused BV to purchase equipment (weapons, armor and so on) for repairing or customizing units (see *Obtaining Replacement Parts*, p. 178).

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FATIGUE RATINGS TABLE

Fatigue Points	Combat Modifiers	Non-Combat Modifiers	Morale Check
0	+0	+1	None
1-4	+0	+0	None
5-8	–1	+0	Yes
9-12	–2	–1	Yes
13-16	–3	–2	Yes
17+	–4	–3	Yes

Situational Modifiers	Modifiers
*Force Quality**	
Green	–0
Regular	+0
Veteran	+1
Elite	+2
Misc.	
Force is Clan	+2

* See *Force Quality*, p. 38

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FORCE QUALITY TABLE

Average Piloting/ Gunnery Skill Rating	Force Quality
7-6	Green
5-4	Regular
3-2	Veteran
1-0	Elite

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AEROSPACE SAR PILOT AND RESCUE TABLE

Situation	Modifier
Rescuing aerospace unit expends thrust	+ Thrust Points spent
Rescuing aerospace unit is the target of attacks	+1
Ejected pilot has maneuvering pack	–1
Rescuing aerospace unit is Small Craft	–1
Rescuing aerospace unit is DropShip	+1
Rescuing aerospace unit is WarShip	+2

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GENERIC FORCE LOYALTY TABLE

Equipment Rating	Force Loyalty
A	Fanatical
B	Fanatical/Reliable
C	Reliable
D	Reliable/Questionable
F	Questionable
Clan	
Front Line = A Rating	
Second Line = B Rating	
Garrison/Solahma = D Rating	

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DOCKING MODIFIERS TABLE

Condition	Modifier
Unit has critical damage to thruster	+1/box
Docking conducted during combat*	+2
Docking unit is JumpShip	+4
Docking unit is WarShip	+3
Docking unit is DropShip over 20,000 tons	+2
Docking unit is DropShip under 5,000 tons	–1
Per 15 minutes added to docking time	–1
Per 5 minutes subtracted from docking time	+1
Sensor damage**	+1/box
Avionics damage**	+1/box
Towing Adaptor on docking unit	–2
Target unit is Out of Control	+5***
Docking collar damaged	Double docking time

*This modifier applies to any docking attempts made within 10 hexes of units firing or being fired upon during the docking procedure.
**On either the docking unit or the target.
*** Impossible unless docking unit has Naval Tug Adaptor (see p. 334, *TO*)

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DOCKING DAMAGE TABLE

Margin of Failure	Effect
0	Docking successful
1	Docking successful. Both docking collars take 1 box of damage.
2	Docking unsuccessful. The craft miss each other, but the pilot can attempt another docking after 10 turns
3	Docking unsuccessful. Both docking collars suffer damage; cross off 1 box. The pilot can attempt another docking after a delay of 10 turns.
4+	Docking unsuccessful. Apply standard-scale damage equal to (MoF – 3) x 10 to the location of both units where the docking collars chosen for the docking attempt are located. The pilot can attempt another docking after 10 turns.

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FAILED PREFLIGHT CHECK LIST TABLE

2D6 Die	Effect*
2-5	No Effect
6-7	+1 modifier to all Control Rolls
8-9	+2 modifier to all Control Rolls, +1 modifier to all Weapon Attack Rolls
10-11	Randomly determine a column and location on the appropriate aerospace Hit Location Table, and apply that critical damage.
12	Randomly determine a column and location twice on the appropriate aerospace unit Hit Location Table, and apply both critical damages.

*If an effect occurs, cargo is damaged as well (if there is cargo; Transport Bays are considered cargo in this instance). Roll 1D6, adding the final die roll result from the roll on the Failed Preflight Check List Table to determine the number of tons damaged; use the Cargo rules on page 239 of *Total Warfare* to determine the final outcome of that damage.

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RANDOM MOVEMENT (ADVANCED VECTORS)

1D6	Effect
1	Turn 2 hexsides left
2	Turn 1 hexside left
3	Increase vector corresponding to current facing by 1
4	Increase vector corresponding to current facing by 2
5	Turn 1 hexside right
6	Turn 2 hexsides right

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SUBORBITAL AND ORBITAL FLIGHT TIMES TABLE

Distance in Kilometers	Flight Time
1,500	15 minutes
2,000	18 minutes
2,500	20 minutes
5,000	30 minutes
10,000	50 minutes
20,000	90 minutes
30,000	120 minutes
40,000	140 minutes

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ATMOSPHERIC FLIGHT TIMES TABLE

Distance in Kilometers	Flight Times (by Altitude)* Ground Row	Atmospheric Row 1
500	18.9 minutes	14.3 minutes
1,000	32.8 minutes	23.5 minutes
2,000	60.6 minutes	42.0 minutes
5,000	2.4 hours	1.6 hours
10,000	4.7 hours	3.2 hours
20,000	9.3 hours	6.3 hours
30,000	14 hours	9.3 hours
40,000	18.6 hours	12.4 hours

* Takeoff and Landing are a military profile of 5 minutes.

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HYPERSPACE NAVIGATION TABLE

Situation	Modifier
Calculations made without navigation computer*	+2
Aerospace unit is moving predictably	+1
Aerospace unit is moving out-of-control	+3
Destination is nadir or zenith point	+0
Destination is non-standard point*	+4
Destination is transient point**	+4
Origin point is at nadir or zenith	0
Origin is non-standard (Lagrange) point	+2
Origin is transient point	+2

*Non-standard points cannot be calculated if a navigation computer is unavailable.
**Transient points require detailed charts of the destination system.

JUMP CALCULATION TABLE

Target is zenith or nadir
With computer: (2D6 – MoS) x 10 minutes
Without computer: (2D6 – MoS) hours
Target is non-standard jump point
With computer: (2D6 – MoS) x 30 minutes
Without computer: Impossible
Other
Unit is moving: Base time x 1.1

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SIZE CLASS DAMAGE TABLE
(ALL DAMAGE IN CAPITAL SCALE)

Unit Tonnage	Damage*
Zero to 500 tons	8 + 1D6
501 to 5,000 tons	14 + 2D6
5,001 to 10,000 tons	18 + 3D6
10,001 to 20,000 tons	24 + 4D6
20,001 to 35,000 tons	30 + 5D6

*Add 1D6 damage if the unit is conducting a vertical landing.

ATMOSPHERIC CONDITIONS

Atmospheric Pressure	Modifier
Vacuum	No Damage
Trace	Multiply Damage by .5
Thin	Multiply Damage by .75
Standard	No Modifier
High	No Modifier
Very High	Multiply Damage by 1.25
Water Take Off	Multiply Damage by 1.25

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JUMPSHIP/WARSHIP/SPACE STATION HIT LOCATION TABLE

2D6 Roll	Nose	Aft	Side
2	Nose/Life Support	Aft/Fuel	Nose/Avionics
3	Nose/Control	Aft/Avionics	Front Side/Sensors
4	Fore-Right/Weapon	Aft-Right/Weapon	Front Side/Front Side Weapon
5	Fore-Right/Thruster	Aft-Right/Thruster	Front Side/Docking Collar
6	Nose/CIC	Aft/Engine	Front Side/K-F Drive
7	Nose/Weapon	Aft/Weapon	Aft-Side/Broadside Weapon
8	Nose/Sensors	Aft/Engine	Aft-Side/Grav Deck
9	Fore-Left/Thruster	Aft-Left/Thruster	Aft-Side/Door
10	Fore-Left/Weapon	Aft-Left/Weapon	Aft-Side/Aft-Side Weapon
11	Nose/Crew	Aft/Control	Aft/Cargo
12	Nose/K-F Drive	Aft/K-F Drive	Aft/Engine

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CAPITAL WEAPONS DETAILED RANGES TABLE

Type	Heat	Short Range	Medium Range	Long Range	Extreme Range
Direct-Fire Ballistic Weapons					
Light Mass Driver	30/60	1–10	11–20	21–30	31–40
Medium Mass Driver	60/100	1-9	10-18	19-27	28-36
Heavy Mass Driver	90/140	1-8	9-16	17-24	25-32
NAC/10	30	1-11	12-22	23-33	34-44
NAC/20	60	1-11	12-21	22-31	32-42
NAC/25	85	1-10	11-20	21-30	31-40
NAC/30	100	1-9	10-18	19-27	28-36
NAC/35	120	1-7	8-14	15-21	22-28
NAC/40	135	1-6	7-12	13-18	19-24
Light N-Gauss	9	1-14	15-28	29-40	41-56
Medium N-Gauss	15	1-13	14-26	27-39	40-52
Heavy N-Gauss	18	1-12	13-24	25-36	37-48
Light SC-Cannon	12	1-7	8-14	15-21	22-28
Medium SC-Cannon	30	1-6	7-12	13-18	19-24
Heavy SC-Cannon	42	1-5	6-10	11-15	16-20
Direct-Fire Energy Weapons					
NL35	52	1-11	12-22	23-33	34-44
NL45	70	1-12	13-24	25-36	47-48
NL55	85	1-13	14-26	27-39	40-52
Light NPPC	105	1-11	12-22	23-33	34-44
Medium NPPC	135	1-12	13-24	25-36	37-48
Heavy NPPC	225	1-13	14-26	27-36	40-52
SCL1	24	1-9	10-18	19-27	28-36
SCL2	28	1-8	9-14	15-19	20-24
SCL3	32	1-7	8-13	14-18	19-22
Missile Weapons					
Killer Whale	20	1-12	13-24	25-36	37-48
White Shark	15	1-12	13-24	25-36	37-48
Barracuda†	10	1-20	21-30	31-40	41-50
AR10*	*	*	*	*	*
Sub-Capital					
Manta Ray	21	1-3	4-5	6-7	8-9
Swordfish	15	1-3	4-6	7-9	10-12
Stingray	12	1-6	7-12	13-18	19-24
Piranha	9	1-9	10-18	19-27	28-36
Tele-Operated‡					
Kraken-T	50	N/A	N/A	N/A	N/A
Killer Whale-T	20	N/A	N/A	N/A	N/A
White Shark-T	15	N/A	N/A	N/A	N/A
Barracuda-T	10	N/A	N/A	N/A	N/A
Equipment					
Screen Launcher	10	1-3	4-6	7-9	10-12

*Per missile type †If using weapon-specific ranges, Barracuda missiles do not gain a to-hit bonus. ‡Tele-operated missile (see p. 251, *TW*)

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BRACKETING FIRE MODE TABLE

Weapon Bay Damage Value Reduction*	To-Hit Modifier	Minimum Number of Weapons in Firing Bay
80%	–1	2
60%	–2	3
40%	–3	4

*Round all fractions down

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OVER-PENETRATION WEAPONS FIRE

1D6 Roll	Result
1-3	All units apply standard damage
4	JumpShips and Space Stations apply over-penetration rules*
5	JumpShips, Space Stations and DropShips apply over-penetration rules*
6	WarShips with an original SI 30 or less and any JumpShips, Space Stations or DropShips apply over-penetration rules*

*All other units apply standard damage.

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RAMMING ATTACKS TABLE (EXPANDED)

Base To-Hit Number: 6 + (target Piloting Skill – attacker Piloting Skill)

Modifiers	
Attacker existing damage:	
Sensor damage	+1
Avionics damage	+1 per box
Target is (in space):	
Fighter or Small Craft	+4*
DropShip	+2
JumpShip	+0
WarShip	+1
Space Station	–1
Satellite	–2
Cannot spend thrust	–2
Evading	Variable**
Target is (in atmosphere):	
Grounded DropShip hex	–2††
Building hex	–2††
Grounded fighter or Small Craft	+4††
Ground Unit‡	+4
Large Support Vehicle	+2
Large Naval Vessel Support Vehicle	Variable‡‡
Small or Medium Airships§	–1
Large Airships§	–2
Mobile Structures	Variable§§
Airborne Air Mobile Structure	+0
Infantry	Not Possible§§§
Attacker is:	
Fighter or Small Craft	–2
DropShip	–1
WarShip	+1
In atmosphere	+2

*Fighter squadrons may not make (or be the target of) ramming attacks
**See p. 77, *TW*.
†If the attack misses, make a Control Roll with +4 modifier, –1 per level above 1 (Max of 0). If the Control Roll fails, the attacker crashes into the ground in the hex behind the target. (Control Roll does not apply if the target was airborne.)
††Target's Piloting Skill Rating is considered equal to attacker.
‡Includes 'Mechs, ProtoMechs, Combat Vehicles, Support Vehicles.
‡‡Apply the following modifier based upon template size: Type A = +1; Type B = +0 Type C = –1, Type D = –2; Type E = –3.
§Grounded or airborne.
§§Start with a +0 modifier, then apply a cumulative –2 modifier for every 10 hexes of size, or fractions there of, above 10; i.e. a 31 hex Mobile Structure would apply a –6 modifier.
§§§Hexes containing infantry can be targeted; apply the standard –4 to-hit modifier and treat as a standard crash (see *Avoiding or Taking Damage*, p. 82, *TW*) for effects on infantry in the hex.

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ADVANCED INITIATIVE TABLE

Initiative = Control Roll MoS/MoF + Class Modifier

Class	Modifiers
Fighter	+3*
Small Craft	+0
DropShip	+0
Support Vehicle (aircraft)	–1
WarShip	–3
Airship	–4
JumpShip	–5
Space Station	–5
Ground Unit in Zero-G Ops	–6
Satellite	–7

*Including squadrons
Dropping Troops: Even when using Advanced Initiative, dropping troops (see p. 22) always move after all other aerospace units have moved (including ground units in zero-g operations). The exception are ejected pilots/lifeboats/escape pods (see p. 26), which always move last after all other aerospace units have moved, including drooping troops.

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MOVEMENT COSTS TABLE

Movement Action/Terrain Type	MP Cost Per Hex	Prohibited Elements
Cost to Enter Any Hex	**1**	
Terrain Cost When Entering Any New Hex		
Clear	+0[5]	Naval vessel
Paved/Bridge	+0	Naval vessel
Road	+0[3]	Naval vessel
Rough	+1	Wheeled, Naval vessel
Light Woods	+1[7]	Wheeled[13], hover, VTOL[9] WiGE[9], Naval vessel
Heavy Woods	+2[8]	Vehicles[9], Naval vessel
Water		
Depth 0	+0	Naval vessel
Depth 1	+1[1]*	Infantry[11], vehicles[4,6]
Depth 2+	+3[1]*	Infantry[11], vehicles[4,6], IndustrialMechs
Level Change (up or down)		
1 level	+1 ('Mechs, VTOLs, submarines, ProtoMechs)	—
	+2 (infantry, ground vehicles)	
2 levels	+2 ('Mechs, VTOLs, submarines)	Infantry, ground vehicles WiGE[10], ProtoMechs
3+ levels	+1/level (VTOLs, submarines)	'Mechs, ProtoMechs, infantry, ground vehicles, WiGE[10]
Rubble	+1	Wheeled, Naval vessel
Light building	+1[2]	VTOL, WiGE, Naval vessel
Medium building	+2[2]	VTOL, WiGE, Naval vessel
Heavy building	+3[2]	VTOL, WiGE, Naval vessel
Hardened building	+4[2]	VTOL, WiGE, Naval vessel
Additional Movement Actions		
Facing change	Free[12]	

[1]MP cost to move along the bottom of the water hex [2]Infantry pays only 1 MP to enter any building hex. [3]If traveling along road; otherwise cost of underlying terrain. [4]Hovercraft may enter all water hexes along the surface.
[5]If a wheeled Support Vehicle lacks the Off-Road Vehicle Chassis and Controls Modification, then movement costs 1 additional MP per hex.
[6]Wheeled or tracked Support Vehicles with the Amphibious Chassis and Controls Modification can move through any water hex on the surface at a cost of 2 MP. [7]Infantry pays only 1 MP to enter any Light Woods hex.
[8]Infantry pays only 2 MP to enter any Heavy Woods hex. [9]VTOL and WiGE vehicles can enter a woods hex provided their elevation is higher than the level of the woods in the hex.
[10]This only applies to WiGE Units entering a hex whose level is higher than the Unit's current hex; see *Wing-In-Ground-Effect*, p. 218, for rules governing entering hexes whose level is lower than the Unit's current hex.
[11]Infantry can enter a water hex of Depth 1 or deeper if they are noted as having UMU MP. [12]Airborne aerospace Elements must pay for facing changes (see *Facing and Heading*, p. 221).
[13]Wheeled Elements with the Bicycle or Monocycle movement modes may enter light woods as if they were a tracked Element. * Plus cost to change levels if applicable

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VEHICLE MOVEMENT MODE TABLE

Movement Mode	BR Movement Code
Hover	h
Naval	n
Submersible	s
Tracked	t
VTOL	v
Wheeled	w (b/m)**†
WiGE	g

**Vehicles and mechanized conventional infantry
†Bicycle or Monocycle Chassis and Controls modification

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CHARGE DAMAGE TABLE

Element Weight	Multiply MP by
Light	.25
Medium	.50
Heavy	.75
Assault	1

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INFANTRY MOVEMENT MODE TABLE

Movement Mode	BF Movement Code	Move As
Foot	f	Ground Element
Jump	j	Ground Element with Jumping ability
Mechanized		
Hover	h	Hover Element
Tracked	t	Tracked Element
Wheeled	w	Wheeled Element
Motorized	m	Ground Element

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UNIT HEIGHT TABLE

Type	Height*
'Mechs	2 levels
ProtoMechs, Vehicles, Infantry and Fighters	1 level
Submarines	1 depth
Large Support Vehicles and Small Craft	2 levels
Aerodyne DropShips	5 levels
Spheroid DropShips	10 levels

*A Unit's height levels (or elevations, if airborne) must be included in the level of the underlying hex when determining a Unit's total height; the height of aerospace Units for LOS purposes is irrelevant while airborne.

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ATMOSPHERIC FACING CHANGES TABLE

Velocity	Powered Turn	Conventional Fighter	Aerospace Fighter*	Aerodyne DropShip/ Small Craft†
1	1	3	3	3
2	1	4	5	5
3	1	5	7	8
4	1	7	9	11
5	1	8	11	13
6	1	9	13	16
7	1	11	15	19
8	2	12	17	21
9	2	13	19	27
10	2	15	21	27
11	2	16	23	29
12	3	17	25	32

*Small and Medium Fixed-Wing Support Elements use this column. Large Fixed-Wing Support Elements use the Aerodyne DropShip/Small Craft column. †Includes Airship Support Elements.

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SPACE FACING CHANGE TABLE

Current Velocity	Thrust Point Cost
0-2	1
3-5	2
6-7	3
8-9	4
10	5
11	6
12+	+1 per point of velocity

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RANGE TABLE

STANDARD RANGES	
Distance	**Range**
0-1 hexes	Short
2-4 hexes	Medium
5-8 hexes	Long

UNDERWATER RANGES	
Distance	**Range**
0 hexes	Short
1-2 hexes	Medium
3-4 hexes	Long

AIR-TO-AIR RANGES	
Distance	**Range**
0-32 hexes	Short
33-64 hexes	Medium
65-107 hexes	Long
108-133 hexes	Extreme

SPACE RANGES (STANDARD WEAPONS)	
Distance	**Range**
0-2 hexes	Short
3-4 hexes	Medium
5-6 hexes	Long
7-8 hexes	Extreme

SPACE RANGES (CAPITAL WEAPONS)	
Distance	**Range**
0-4 hexes	Short
5-8 hexes	Medium
9-13 hexes	Long
14-17 hexes	Extreme

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DETERMINING CRITICAL HITS TABLE

2D6 Roll	'Mech*	ProtoMech	Vehicle	Aerospace†	DropShip‡
2	Ammo Hit	Weapon Hit	Ammo Hit	Fuel Hit	KF Boom Hit
3	Engine Hit	Weapon Hit	Crew Stunned	Fire Control Hit	Docking Collar Hit
4	Fire Control Hit	Fire Control Hit	FCS Hit	Engine Hit	No Critical Hit
5	No Critical Hit	MP Hit	FCS Hit	Weapon Hit	Fire Control Hit
6	Weapon Hit	No Critical Hit	No Critical Hit	No Critical Hit	Weapon Hit
7	MP Hit	MP Hit	No Critical Hit	No Critical Hit	Thruster Hit
8	Weapon Hit	No Critical Hit	No Critical Hit	No Critical Hit	Weapon Hit
9	No Critical Hit	MP Hit	Weapon Hit	Weapon Hit	Door Hit
10	Fire Control Hit	Proto Destroyed	Weapon Hit	Engine Hit	No Critical Hit
11	Engine Hit	Weapon Hit	Crew Killed	Fire Control hit	Engine Hit
12	Head Blown Off	Weapon Hit	Engine Hit	Crew Killed	Crew Hit

*Roll 2D6 twice for IndustrialMechs. Apply both Critical Hits. †Includes Fixed-Wing Support Elements, Airships and Conventional Fighters ‡Includes Small Craft

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TO-HIT MODIFIERS TABLE

RANGE MODIFIERS	
Range	**Modifier**
Short	+0
Medium	+2
Long	+4
Extreme	+6[4]

TARGET MOVEMENT MODIFIER[1]	
Target's Available MP	**Modifier**
0-2	+0
3-4	+1
5-6	+2
7-9	+3
10-17	+4
18+	+5

TERRAIN MODIFIERS[2]	
Terrain	**Modifier**
Depth 1 Water	+1[3]
Light Woods	+1
Heavy Woods	+2

PHYSICAL ATTACKS MODIFIER	
Physical Attack Type	**Modifier**
Charge	+2
Death From Above	+3
Melee Physical Attack	+1
Standard Physical Attack	+0
Target is Grounded DropShip	–2

MISCELLANEOUS MODIFIERS	
Attacker	**Modifier**
Attacking Indirectly	+1[4]
Fire Control Hit	+2[5]
Flak Special Ability (see p. 349)	–2[6]
IndustrialMech	+1[7]
Attacking Multiple Targets	+1[13]
Support Element	+2[8]
Is Grounded Aerospace Element	+2[14]
Striking	+2
Strafing	+4
Altitude Bombing	+3
Dive Bombing	+2
Spotting for Indirect Fire	+1[9]
Overheated	+Heat Level [1-3]

TARGET TYPE MODIFIER	
Target Element Type	**Modifier**
Airborne Element	+1/+2/+0[10]
Battle Armor	+1
Jump Capable	+1
Large Support Element	–1
ProtoMech	+1
Grounded Small Craft	–1[16]
Grounded Aerospace Element	*[15]

TARGET MODIFIER	
Target	**Modifier**
Has Stealth Armor	Varies[11]
Is Shutdown/Immobile	–4[12]

[1]Modifier is based upon available MP modified by heat level and critical hits if applicable. MP expended are irrelevant. Does not apply to aerospace Elements.
[2]Applies when target occupies a hex with the indicated terrain type.
[3]Does not apply if attacker is submerged.
[4]Only aerospace Elements use Extreme range in the standard rules.
[5]May apply multiple times. Does not apply to physical attacks
[6]Applies for ground-to-air attacks against airborne aerospace, VTOL and WiGE targets only.
[7]Disregard if the IndustrialMech has the Advanced Fire Control special ability (see p. 345).
[8]If Support Element has basic fire control, replace with +1 modifier. If Support Element has advanced fire control, replace with +0 modifier.
[9]If the spotter is also making an attack, apply this modifier to the spotter's attack, and the indirect attack (see *Indirect Fire Attacks*, p. 225).
[10]Applies to all aerospace Elements that are airborne or in space. Apply an angle of attack modifier as follows: Attacks against the Nose(+1), Sides (+2), or Aft (+0).
[11]Battle armor targets: Add +1 at short and medium ranges. Add +2 at long range. All others: +0 at short range, +1 at medium range and +2 at long range.
[12]Includes bridges, buildings, grounded DropShips, hexes and woods. Shutdown Elements do not get a target movement modifier. Grounded DropShips do not get an angle of attack modifier.
[13]Applies to all attacks after the first. DropShips ignore this modifier.
[14]Aerospace Elements that are not DropShips add a +2 to-hit modifier when on the ground.
[15]Grounded aerospace fighters, conventional fighters, size class 1 & 2 fixed-wing support elements, and size class 1 & 2 airships do not get an angle of attack modifier, but instead get a target movement modifier as if they had a MV equal to 1/2 their TP (rounded down).
[16]Grounded Small Craft do not get an angle of attack modifier.

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DETERMINING MOTIVE SYSTEMS DAMAGE

CHANCE FOR MOTIVE SYSTEM DAMAGE	
1D6 Roll	**Result**
1-4	No Effect
5-6	Roll for Motive Systems Effect (below)

EFFECT OF MOTIVE SYSTEMS DAMAGE	
2D6 Roll	**Result**
2-7	No Effect
8-9	–1 MV; The Element's MV is reduced by 1 for the remainder of the game
10-11	–1/2 MV; Multiply the Element's MV by 0.5 and round down
12	The Element is immobilized

MODIFIERS*	
Tracked/Naval	+0
Wheeled	+2
Hit from the rear	+1
Hovercraft/Hydrofoil	+3
VTOL/WiGE	+4

*Applies to Effects of Motive Systems Damage only. All modifiers are cumulative.

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ELEMENT HEIGHT TABLE

Type	Height*
'Mechs	2 levels
ProtoMechs, Vehicles, Infantry and Fighters	1 level
Large Support Vehicles and Small Craft	2 levels
Very Large Support Elements	3 levels
Super Large Support Elements	4 levels
Aerodyne DropShips	5 levels
Spheroid DropShips	10 levels
Mobile Structures	Varies**

*A Unit's height levels (or elevations, if airborne) must be included in the level of the underlying hex when determining a Unit's total height; the height of aerospace Units for LOS purposes is irrelevant while airborne.
**Refer to the Mobile Structure's *Total Warfare* statistics for its height.

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AEROSPACE MOVEMENT TABLE

Movement Mode	BR Movement Code
Aerodyne	a
Airship	i
Spheroid	p

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BATTLEFIELD INTELLIGENCE TABLE

Battlefield Intelligence Rating	
Points	Item
2	Each ground Element with the Recon special ability
1	Each non-DropShip aerospace Unit
2	Each non-DropShip aerospace Unit with the Recon special ability
2	Each DropShip
5	Each Satellite Element with the Recon special ability
1	Each point of MHQ special ability

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STANDARD COMMAND POINTS TABLE

Typical Formation	Points Available Without HQ	Points Available With HQ
Inner Sphere/Periphery Company	4	11
Inner Sphere/Periphery Battalion	15	22
Inner Sphere/Periphery Regiment	51	58
Clan Trinary	4	11
Clan Cluster	13	20
Clan Galaxy	40	47
ComStar/WoB Level II	1	8
ComStar/WoB Level III	8	15
ComStar/WoB Level IV	49	56

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ARTILLERY RANGE AND DAMAGE TABLE

Artillery Type	Range in BF Maps	Range in BF Hexes	BF Damage
Arrow IV (IS)	3	45	3(2)
Arrow IV (Clan)	3	51	3(2)
Thumper	7	119	3
Sniper	6	102	3
Long Tom	10	170	5/1
Cruise Missile/50	17	283	8
Cruise Missile/70	30	510	11/2
Cruise Missile/90	40	680	16/6
Cruise Missile/120	50	850	22/14
Thumper Cannon	—	5	1
Sniper Cannon	—	4	1
Long Tom Cannon	—	6	3

ARTILLERY FLIGHT TIME TABLE

CRUISE MISSILES

Range	Resolve the Attack in … turns
In *BattleForce* mapsheets	1 + (range in mapsheets/1.67) rounded down
In *BattleForce* hexes	1 + (range in hexes/28.34) rounded down

ALL OTHERS

BF Maps	BF Hexes	Resolve the Attack
1	1–17	Immediately
2–3	18–45	1 turn later
4–5	46–85	2 turns later
6–7	86–119	3 turns later
8–9	120–147	4 turns later
10	148–170	5 turns later

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SPECIAL MANEUVERS TABLE

Maneuver	Min/Max Velocity	TP Cost	Effect
Loop	Min 4	3	The Element spends its first 4 points of Velocity in the loop, though the actual velocity remains unchanged. It ends in the same hex where it started the move, then spends the remainder of its Velocity normally.
Immelmann	Min 3	3	The Element gains one altitude and ends the maneuver facing any hexside. Velocity drops by 2. The remainder is spent normally.
Split-S	Any	2	The Element loses one altitude and ends the maneuver facing any hexside. Velocity increases by 1.
Hammerhead	Any	Velocity +3	The Element remains in its starting hex, but changes facing 180 degrees.
Barrel roll	Min 2	1	The Element rolls 360 degrees, ending with the same facing. Velocity drops by 1.
Sideslip	Any	1	Instead of moving into the hex directly ahead, the Element moves 1 hex to the front-left or front-right without changing facing.
VIFF	Any*	Velocity +2	Successfully using this Vector in Forward Flight maneuver, a VSTOL Element halts its forward momentum and gains one altitude.

* VSTOL Unit only

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ARTILLERY MODIFIERS TABLE

Situation	Modifier
Each successive shot at the same target hex*	–1
Friendly Element acting as spotter	–1
Spotter has LPRB, PRB or BH	–2
Spotter has Recon†	–1

*Applies only if a spotter has LOS to the target hex in the turn in which the attack is resolved.
†Do not apply this modifier if the spotter has LPRB, PRB or BH.

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CREW CASUALTIES TABLE

Percentage of Crew Casualties	Crew Hits
5–25	1
26–50	2
51–75	3
76+	4

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INITIATIVE MODIFIERS TABLE

Special Ability	Modifier
MHQ3	+1
MHQ3 + 4 or More Elements with Recon	+2
MHQ7	+2
MHQ7 + 4 or More Elements with Recon	+4

Battlefield Modifier	Modifier
Objective Occupied	+1*
Objective Captured	+2*
Opponent's Tier Four Command Unit Destroyed	+2*
Opponent's Tier Three Command Unit Destroyed	+1*

Leadership Modifiers	Modifier
Field Commander	+Tier†

Force Status Modifiers	Penalty
≥ 50% of Forces Broken	–1
≥ 50% of Forces Routed	–2
≥ 50% of Forces Destroyed	–3
Force Has No Elements With Recon	–1
Headquarters Occupied	–2‡
Headquarters Captured	–4‡

*Applies to the following turn only.
†Unit must have at least one functional Element. Points are awarded for the highest tier of command only.
‡Applies to the Headquarters Counter only, not Mobile Headquarters (MHQ).

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ADVANCED ESPIONAGE

Action	Modifier
Reveal a Command	–0
Reveal a Request	–0
Eliminate a Command	–4
Eliminate a Request	–3
Reveal a Command Unit	–2
Reveal Tier of Command	–4
Change a Command	–6
Initiate Forced Withdrawal	–4

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HIGH ALTITUDE MAP ATMOSPHERIC VELOCITY TABLE

Altitude	Maximum Velocity
Ground Hex	2
Row 1	3
Row 2	6
Row 3	9
Row 4	12
Interface	15

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CONVENTIONAL MINEFIELD TABLE

Density	Target Number
5	5+
4	6+
3	7+
2	8+
1	9+

ADVANCED COMBAT MODIFIERS TABLE

RANGE MODIFIERS

Range	Modifier
Short	+0
Medium	+2
Long	+4
Extreme	+6

TARGET MOVEMENT MODIFIER[1]

Target's Available MP	Modifier
0–2	+0
3–4	+1
5–6	+2
7–9	+3
10–17	+4
18+	+5

TERRAIN MODIFIERS[2]

Terrain	Modifier
Depth 1 Water	+1[3]
Heavy Industrial Zone	+1
Jungle, Light	+1
Jungle, Heavy	+2
Jungle, Ultra-Heavy	+3
Woods, Light	+1
Woods, Heavy	+2
Woods, Ultra-Heavy	+3

ENVIRONMENTAL MODIFIERS

Type	Modifier
Blizzard	+2
Blowing Sand	+2
Dusk/Dawn	+1
Space/Atmosphere Interface	+2[23]
Fog	+1
Geyser	+2
Moonless Night	+3[15]
Night	+2[15]
Pitch Black	+4[15]
Rainfall, Torrential	+2
Rainfall, Light, Moderate, Heavy	+1
Smoke, Light	+1
Smoke, Heavy	+2
Snowfall, Sleet	+1[26]
Winds, Storm	+2
Winds, Strong Gale	+1

PHYSICAL ATTACKS MODIFIERS

Type	Modifier
Charge	+2
Death From Above	+3
Melee Physical Attack	+1
Standard Physical Attack	+0

MISCELLANEOUS MODIFIERS

Attacker	Modifier
Capital Weapon vs. Small Target	+5[28]
Surface-to-Surface Fire (Capital Artillery Attack)	+9
Sub-Capital Weapon vs. Small Target	+3[28]
Evasive Maneuvers (Aerospace)	+2[18]
Fire Control Hit	+2[5]
Flak Special Ability	–2[6]
Firing Through Atmosphere	+2[16]
In Freefall	+2[17]
Direct-Fire Artillery	+4
Indirect-Fire Artillery	+7
IndustrialMech	+1[7]
Drone	+1
Ground Element in Zero-G	+4
Landed This Turn	+3[27]
Landing on the Hull (Enemy)	+5
Landing on the Hull (Friendly)	+3
Making Anti-'Mech attack	+4
Overheated	+Heat Level [1–4]
Spotting for Indirect Fire	+1[9]
Support Element	+2[8]
Has LPRB, PRB or BH	–1[25]
Affected by EMP Mine	+2
Is Grounded DropShip	–2

ATTACK TYPE MODIFIERS

Type	Modifier
Altitude Bombing	+3
Artillery (Direct-Fire)	+4[22]
Artillery (Indirect-Fire)	+7[29]
Artillery (Homing)	Special[19]
Attacking Indirectly	+1[4]
Dive Bombing (including VTOLS)	+2
Grappling	+0
Strafing (including VTOLS)	+2
Striking	+2
TAG	+0

TARGET TYPE MODIFIERS

Target Element Type	Modifier
Aerospace Element	+1/+2/+0[10]
Airborne VTOL or WiGE	+1
Battle Armor	+1
Grounded DropShip	–4[11]
Jump Capable	+1
Dropping from High Altitude	+4
ProtoMech	+1
Grounded Small Craft	–1[30]
Grounded Aerospace Element	*[31]
Large Support Element	–1
Very Large Support Element	–2
Super Large Support Element	–3
Mobile Structure	–4

TARGET MODIFIERS

Target	Modifier
Evading (Ground)	
Wet Behind the Ears	+1
Really Green	+1
Green	+1
Regular	+2
Veteran	+3
Elite	+3
Heroic	+4
Legendary	+4
Evasive Maneuvers (Aerospace)	
Fighter	+3
Fighter Squadron	+2
Small Craft	+3
DropShip	+2
DropShip Squadron	+1
WarShip	+1
Has Point Defense Special Ability	+1[14]
Has Mimetic Armor	Varies[24]
Has Stealth Armor	Varies[12]
Fighter or Fighter Squadron	+5/+3[20]
Landing on Hull	+2[21]
Shutdown/Immobile	–4[13]

[1]Modifier is based on available MP modified by heat level and critical hits if applicable. MP expended are irrelevant. Does not apply to aerospace Elements.
[2]Applies when target occupies a hex with the indicated terrain type.
[3]Does not apply if attacker is submerged.
[4]If the spotting Element makes a weapon attack in the same turn as it spots, apply this modifier to the indirect attack(s) as well.
[5]May apply multiple times. Does not apply to physical attacks.
[6]Applies for ground-to-air attacks against airborne aerospace, VTOL and WiGE targets only.
[7]Disregard if the IndustrialMech has the Advanced Fire Control (AFC) special ability (see p. 345).
[8]If Support Element has basic fire control, replace with +1 modifier. If Support Element has advanced fire control, replace with +0 modifier.
[9]Not cumulative with the modifier for attacking indirectly.
[10]Applies to all aerospace Elements that are airborne or in space. Apply an angle of attack modifier as follows: Attacks against the Nose(+1), Sides (+2), or Aft (+0).
[11]Also considered immobile, but do not apply an additional -4 for this. Apply an additional –2 for physical attacks.
[12]Battle armor targets: Add +1 at short and medium ranges. Add +2 at long range. All others: +0 at short range, +1 at medium range and +2 at long range.
[13]Includes buildings, grounded DropShips, hexes and woods. Shutdown Elements do not get a target movement modifier. Grounded DropShips do not get an angle of attack modifier.
[14]+1 per Point Defense System to a maximum of +4 against capital missiles only.
[15]For Elements without the Searchlight (SRCH) special ability (see p. 352). Also applies if the attacker or target are in Depth 10 water or deeper.
[16]Per hex, thus an orbit-to-surface attack adds +8. Sub-Capital weapons add an additional +2 (once, not per hex).
[17]Include the +3 modifier for jumping in addition to this modifier.
[18]Only DropShips and WarShips may make attacks when engaged in evasive maneuvers.
[19]Hits on a 2D6 roll of 4+ if TAG roll is successful.
[20]Applies when attacker is using capital-scale/sub-capital scale weapons.
[21]Target gets half (round down) of its normal MV for its target movement modifier. Roll 1D6 for every attack. On a result of 1, the attack strikes the Hull Element instead.
[22]Do not include modifiers for terrain, target movement or Immobile targets on this type of attack.
[23]Applies to all shots into, out of or through the space/atmosphere interface, except for orbit-to-surface attack.
[24]See Mimetic Armor System (MAS) special ability, p. 350.
[25]Only applies if the target is within the probe's range.
[26]Automatically imposes the environmental condition Cold.
[27]Applies only to Elements landing on the battlefield using the Dropping Troops rules (see p. 313).
[28]Applies to a capital weapon attack (+5) or sub-capital weapon attack (+3) against aerospace fighters, aerospace fighter squadrons, Small Craft or Satellites.
[29]Do not apply any other modifiers from this table, but do apply modifiers from the Artillery Modifiers Table, p. 286.
[30]Grounded Small Craft do not get an angle of attack modifier.
[31]Grounded aerospace fighters, conventional fighters, size class 1 & 2 fixed-wing support elements, and size class 1 & 2 airships do not get an angle of attack modifier, but instead get a target movement modifier as if they had a MV equal to 1/2 their TP (rounded down).

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COMMAND SUMMARY TABLE

Command Name	PH	PV	MP	Attacks	Effects
Alpha Strike!	C	2	—	—	Add +1 to the Overheat Value of entire Unit
Ambush	C	3	—	—	Interrupt opponent's movement phase and attack
Bait and Switch	C	2	–2	–1	Attacks against Unit suffer +1 to-hit modifier
Bingo Fuel	M	3	—	—	Opposing aerospace Unit leaves play
Bravo Zulu	C	3	—	+2	Add +2 to the Overheat Value for entire Unit
Careful Aim	C	2	None	–1	Unit may not jump, but gains –1 to-hit modifier
Carpe Diem	E	3	—	—	Force gets a +2 initiative modifier next turn
Charlie Foxtrot	C	1	—	—	Element does +1 damage in physical attacks
Command Disruption	A	4	—	—	Interrupts all opposing commands
Dead to Rights	C	2	—	–3	One Element gets –3 to-hit modifier
Defector	A	4	—	—	Opposing Unit changes sides
Double-Time March	M	1	+1	+1	1 additional MP, with a +1 to-hit modifier
Evasive Action	M	2	—	None	All attacks against Unit at +2 to-hit modifier
Fall Back!	M	2	+2	+2	All subordinate Units may not move closer to enemy
Final Glory	C	2	—	—	Eliminates one opposing Element; Unit is easier to hit
Hello, HQ?	A	3	None	—	Target Unit can't move, Elements at 1/2 move for to-hit
Hold the Line	C	2	None	–1	Unit gets a –1 to-hit modifier and make Morale check
Jam Transmission	A	2	—	—	Cancel opposing Unit's command
Jury-Rig	A	1	—	—	Target Element suffers 1 point of damage
Luck of the Fox	A	3	—	—	Unit may re-roll any one roll, or Force opponent to re-roll
No Joy	C	2	—	—	Opposing Unit cannot attack
Rally to the Flag	E	1	—	—	Unit automatically makes Morale check
Retreat	M	2	Double	None	All subordinate Units move double
Sacrifice	C	2	—	—	One Element makes special charge attack
Social General	C	3	—	Varies	Unit is easier to hit in exchange for attack bonus
Stand and Shoot	C	4	None	–2	Unit can't move, but gets a –2 to-hit modifier

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ALTERNATE MUNITIONS TABLE

Weapon	To-Hit Modifier	Damage Modifier
Autocannon		
Armor-Piercing	+1	+0
Flak	–2	+0
Flechette Ammo	+0	+0
Precision Ammo	‡	+0
Tracer Ammo	§	+0
I-Narc		
ECM	+0	+0
Explosive	+0	+0
Haywire	+0	+0
Short Range Missiles		
Heat Seeking (HS)	–2*	+0
Infernos	+0	††
Magnetic Pulse (MP)	+0	+0
Mine Clearance	+0	+0
Smoke	+0	+0
Tandem Charge (TC)	+0	+0
Long Range Missiles		
Follow the Leader (FTL)	+2	+1
Heat Seeking (HS)	–2*	+0
Magnetic Pulse (MP)	+0	+0
Mine Clearance	+0	+0
Semi-Guided	†	+0
Smoke	+0	+0
Swarm/I-Swarm	+0	+0
Thunder	+0	+0

*Target must be at 2 or higher on the heat scale
†If the target is successfully hit by a TAG attack in the current turn, all attacks using Semi-Guided mUnitions ignore the target's movement modifier.
‡Reduce target movement modifier by 2 to a minimum of zero.
§Eliminate any dusk/dawn to-hit modifiers and reduce night modifiers by 1
††Convert SRM damage to Heat damage, to a max of HT2. Damage in excess of 2 points is lost.

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MORALE TABLE

Unit Experience	BattleMechs*	Combat Vehicles†	Infantry**	Support Vehicles‡
Really Green	5	7	10	11
Green	3	5	8	9
Regular	1	3	5	6
Veteran	—	1	3	4
Elite	—	—	1	1
Legendary	—	—	—	—
Heroic	—	—	—	—

Element Experience	BattleMechs*	Combat Vehicles†	Infantry**	Support Vehicles‡
Really Green	6	8	11	12
Green	4	6	9	10
Regular	2	4	6	7
Veteran	—	2	4	5
Elite	—	—	2	2
Legendary	—	—	—	—
Heroic	—	—	—	—

Infantry Only††	Modifiers	Units Only	Modifiers	Situation	Modifiers
'Mech Attack	+1	Broken Morale	+1	Inferno Attack	+1/+3§
Artillery Attack	+2			Cruise Missile	+2
Broken Morale	+1			Orbit-to-Surface Attack	+4
In Building Hex	–2				
Battle Armor	–2				

*Includes OmniMechs, aerospace fighters and ProtoMechs.
**Includes battle armor.
†Includes conventional fighters, Small Craft, DropShips and WarShips.
††Apply each modifier only once.
‡Includes Military Support Vehicles, JumpShips and Space Stations.
§All other Element types / infantry Elements

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RECOVERING NERVE TABLE

All Elements/Unit Situation	Modifier
Element with the Leader special ability within 6 hexes	–Tier of Command

Infantry Only	
Situation	Modifier
Friendly non-'Mech, non-infantry Unit within LOS	–1
Friendly 'Mech in LOS	–2
Routed infantry Element/Unit within LOS	+1
Routed non-infantry Element/Unit within LOS	+2

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VEHICLE BAY TYPE TABLE

Bay Type	Abbreviation	Vehicle Weight Classes Allowed
Medium	M	1 and 2
Heavy	H	1, 2, 3, 4 and Support or Transport Vehicles up to 100 tons in mass
Super-Heavy	S	1, 2, 3, 4 and any Support or Transport Vehicle up to 200 tons in mass

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ELEMENT HEIGHT TABLE

Type	Height*
'Mechs	2 levels
ProtoMechs, Vehicles, Infantry and Fighters	1 level
Large Support Vehicles and Small Craft	2 levels
Very Large Support Elements	3 levels
Super Large Support Elements	4 levels
Aerodyne DropShips	5 levels
Spheroid DropShips	10 levels
Mobile Structures	Varies**

*A Unit's height levels (or elevations, if airborne) must be included in the level of the underlying hex when determining a Unit's total height; the height of aerospace Units for LOS purposes is irrelevant while airborne.
**Refer to the Mobile Structure's *Total Warfare* statistics for its height.

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EXPANDED CRITICAL HITS TABLE

2D6 Roll	'Mech*	ProtoMech	Vehicle††	Aerospace†	DropShips‡	JumpShips**
2	Ammo Hit	Weapon Hit	Ammo Hit	Fuel Hit	KF Boom Hit	Door Hit
3	Engine Hit	Weapon Hit	Crew Stunned	FCS Hit	Collar Hit	Dock Hit
4	FCS Hit	FCS Hit	FCS Hit	Engine Hit	No Critical Hit	FCS Hit
5	No Critical Hit	MP Hit	FCS Hit	Weapon Hit	FCS Hit	No Critical Hit
6	Weapon Hit	No Critical Hit	No Critical Hit	No Critical Hit	Weapon Hit	Weapon Hit
7	MP Hit	MP Hit	No Critical Hit	No Critical Hit	Thruster Hit	Weapon Hit
8	Weapon Hit	No Critical Hit	No Critical Hit	No Critical Hit	Weapon Hit	Thruster Hit
9	No Critical Hit	MP Hit	Weapon Hit	Weapon Hit	Door Hit	No Critical Hit
10	FCS Hit	Proto Destroyed	Weapon Hit	Engine Hit	No Critical Hit	K-F Drive Hit
11	Engine Hit	Weapon Hit	Crew Killed	FCS Hit	Engine Hit	Engine Hit
12	Head Blown Off	Weapon Hit	Engine Hit	Crew Killed	Crew Hit	Crew Hit

*Roll 2D6 twice for IndustrialMechs. Apply both critical hits. **Includes Warships, Satellites and Space Stations. †Includes Fixed-Wing Support Elements, Airships and conventional fighters. †† Includes non-aerospace Large, Very Large and Super Large Support Elements, and Mobile Structures. ‡Includes Satellites and Small Craft.

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FIRE STARTING TABLE

Water	Clear*	Paved†	Rough‡	Jungle	Woods	Building	Industrial	Magma
—	11/11	—	12/12	7/10	6/9	9/10	4/6	4/6

MODIFIERS

Environmental Condition††	Modifier
Deep Snow	+3
Geyser	+3
Ice	+4
Mud	+5
Rapids	N/A§
Swamp	+5
Blizzard	+2
Rainfall, Torrential	+2
Rainfall, Light, Moderate, Heavy	+1
Snowfall, Sleet	+2
Winds, Moderate	+1
Winds, Storm	+2
Winds, Strong Gale	+4
Tornado	No Fire§§

Weapon Type	Modifier
Indirect Fire	+1
Heat‡‡	–2
Inferno	Automatic§

Fire Spreading	Modifier
Directly Downwind	+1
Obliquely Downwind	+3
Crossing Non-Flammable Hex	+3 (per hex)

*Includes Tundra. Fires in these hexes burn for 1D6 turns and then go out.
†Includes Road, Bridge, Rail, and Sand. These hexes are non-flammable.
††All modifiers are cumulative.
‡Includes Rubble
‡‡Attacks with the Heat special ability may set intentional fires to clear and rough hexes on a result of 9 or 10, respectively. Accidental fires may be started on a 10 and 11 respectively.
§Infernos automatically start fires, except in rapids. Fires may only burn on the surface of a water hex.
§§Infernos burn out after 1turn.

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BUILDINGS TABLE

Building Type	Additional MP Per Hex*	Construction Factor (CF)	Damage Absorbed (Infantry)	Damage Absorbed (Non-Infantry)
Light	+1	5	2	1
Medium	+2	12	4	2
Heavy	+3	27	6	3
Hardened	+4	36	8	4

*Infantry (including battle armor) and ProtoMechs only pay 1 MP to enter building hexes, regardless of the building type.

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COLLAPSE DAMAGE TABLE

Building Type	Damage*
Light	1
Medium	2
Heavy	3
Hardened	4

*Per 4 full levels of building.

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DETERMINING PREVAILING WIND TABLE

1D6 Roll	Wind Type	Wind Force
1-2	None	0
3	Light Gale	1
4	Moderate Gale	2
5	Strong Gale	3
6	Storm	4

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TERRAIN FACTOR AND CONVERSION

Terrain Factor	New Terrain
Clear/Rough: 200	Sub-Level 1
Deep Snow: 9	Light Snow
Dirt Road: 6	Rough*
Gravel Piles: 30	Rough
Gravel Road: 15	Rough*
Ice: 12	†
Jungle, Heavy: 32	Light Jungle
Jungle, Light: 20	Rough
Jungle, Ultra-Heavy: 45	Heavy Jungle
Light Snow: 5	Mud
Magma Crust: 9	Magma Liquid
Paved Hex: 60	Rough
Paved Road: 45	Rough*
Planted Fields: 9	Rough
Sand: 30	Sand Sub-Level 1
Sheer Cliffs: 15	‡
Tundra: 21	Rough
Woods, Heavy: 27	Light Woods
Woods, Light: 15	Rough
Woods, Ultra-Heavy: 40	Heavy Woods

*These hexes still count as road hexes, though Elements must pay 1 additional MP per hex traveled.
†If the underlying terrain is water, the hex becomes a water hex; otherwise, ice is removed from the hex and the underlying terrain remains unchanged.
‡The feature is removed from the hex.